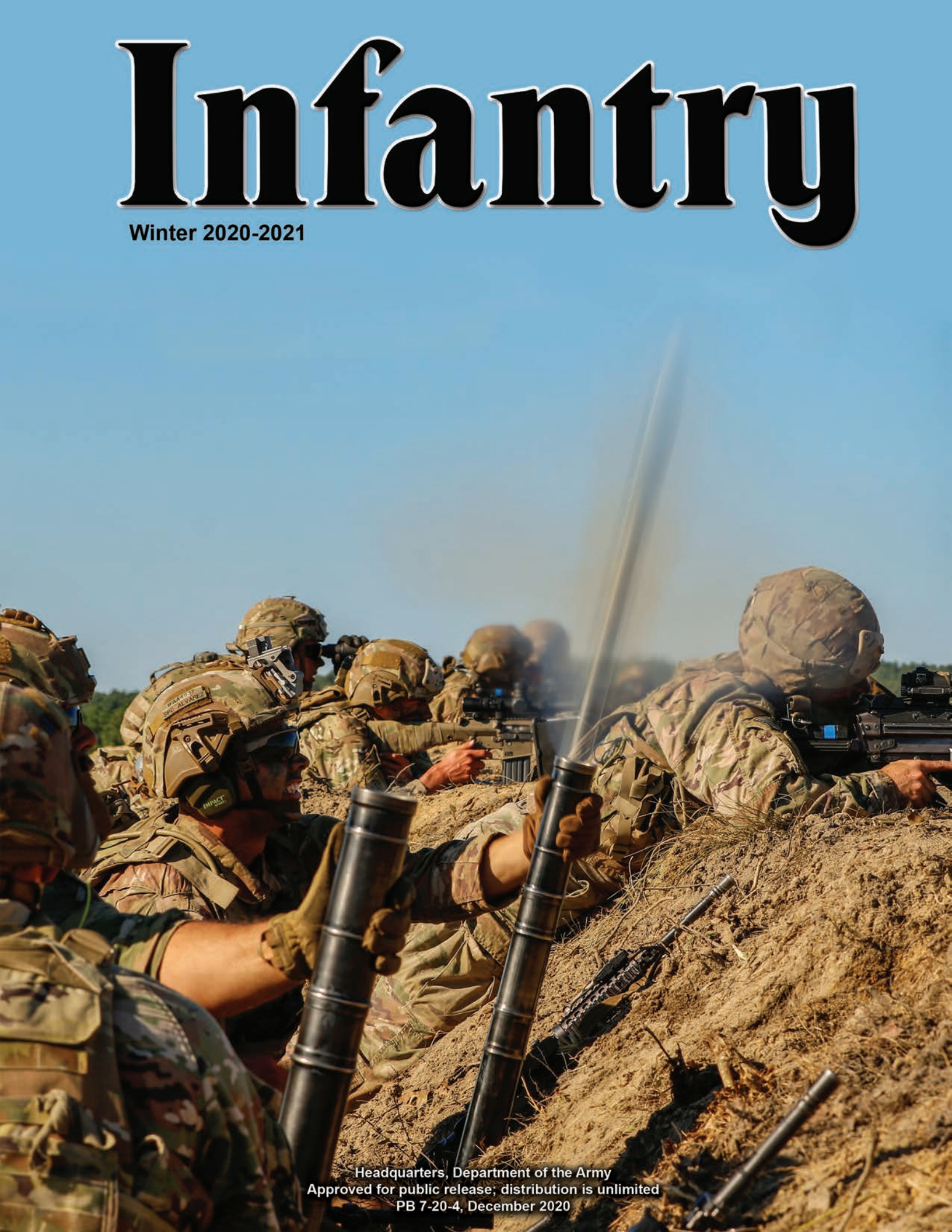
Infantry

Winter 2020-2021



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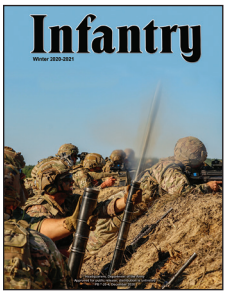

FRONT COVER:

Paratroopers from the 1st Battalion, 508th Parachute Infantry Regiment, 3rd Brigade Combat Team, 82nd Airborne Division, execute a combined arms live-fire exercise on 30 September 2020 at Fort Bragg, NC. (Photo by SGT Cody D.J. Parsons)

BACK COVER:

Paratroopers assigned to the 2nd Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade, and Paratroopers assigned to the Italian Army 4th Alpini Regiment conduct an airborne operation at Juliet Drop Zone, Pordenone, Italy, on 12 November 2020. (Photo by Davide Dalla Massara)

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

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DEPARTMENTS

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Commandant's Note

BG DAVID M. HODNE

Retaining Our Best Talent:
A Shared Responsibility

We publish this edition of *Infantry* emphasizing the Army Chief of Staff's enduring guidance that people are our first (#1) priority. During his recent address during AUSA's 2020 virtual event, GEN McConville highlighted that a strategy focusing on people identifies, recognizes, cultivates, and leverages our unique skills. Over the last two years, most witnessed and many participated in the U.S. Army's approach to creating a new personnel talent management system. This reform continues to evolve as it seeks to maximize the potential and talent of our greatest resource…our people. Integrating innovative technology and fielding new equipment certainly contributes to regaining overmatch against pacing threats, however, GEN McConville made it clear that Soldiers remain the centerpiece of our unrivaled Army.

People matter most.

In addition to fundamentally changing how we select Battalion and Brigade level Commanders and Command Sergeants Major, providing transparency on assignment preferences, and adjusting how and when we promote officers, among the other outcomes of the talent management processes, includes elevating the quality and frequency of conversations about career opportunities in our Army and our Infantry Branch. All Infantrymen, from the most senior Colonels to our junior Noncommissioned Officers, prefer to make informed decisions about their career choices. The marketplace provides a logical starting point for these conversations, and I would like to offer additional context as to when raters and senior raters should personally engage in the discussion. Talent management is not solely about aligning or maximizing the right talent against the right job or duty position. It is also about building and developing talent through coaching our leaders to broaden and expand their knowledge. Most important to readiness, however, talent management is about investing in and retaining our best talent in our great Army.

Retaining talent, among our shared responsibilities, occurs when we leverage the initiative and potential of our people while also earning their trust and confidence within the profession. Our Infantry Branch remains healthy and our senior Infantry officers remain in very high demand in the most competitive and challenging assignments. From our high selection rates for command of Battalions and Brigades, to leading formations within Security Force Assistance Brigades, supporting Joint headquarters, leading special operations efforts within our premier 75th Ranger Regiment, to serving as Division/Corps G3s and Chiefs of Staff, Infantry officers continue to set the example for others to follow. Our senior Noncommissioned Officers also continue to set the example for the Army. Our Sergeants Major mirror the excellence in our Officer corps, through their high selection rate to Command Sergeants Major and critical key billets in the force. Their invaluable service as our senior enlisted advisors strengthens our common bond to our most valued treasure, our Infantrymen. In spite of the strong performance of our Branch, in dedicating attention to engaging Officers and Noncommissioned Officers "at the right time" we can do better in retaining our very best.

Knowing when to engage is paramount for raters and senior raters. Within our officer cohorts, Infantry Majors, Lieutenant Colonels, and Colonels already navigated the traditional decision points associated with committing to a career in the Army. These officers recognize these decisions generally occur within an officer's 3rd, 5th, 7th, and 10th year of service. Our Branch hosts a large number of detailed officers fulfilling their initial service obligation and we expect to lose about 35-40% of a Year Group (YG) of these detailed officers to their Control Branch at the 4th year of service (Captain's Career Course). Between the 5th and 6th year of service we traditionally see the completion of service obligations with Infantry YG cohorts at approximately 45-50% of their initial strength. Between their 7th and 10th years of service in advance of Intermediate Level Education (ILE), cohorts trend towards 25% of their original population of basic branch Infantry Officers. This eventually results in a committed population of over 1,000 Infantry Majors, almost 900 Infantry Lieutenant Colonels, and 400 Infantry Colonels leading across the entire range of operating force (conventional and SOF), generating force (TRADOC), and broadening opportunities.

As marketplace opportunities expand across both officer and enlisted assignments, I offer this

perspective towards our shared responsibility in leveraging the conversations on the margins of the marketplace. I applaud all of the efforts of the Army Talent Management Task Force to incentivize service. **However, while incentive structures largely determine *whether* or *when* junior officers decide to leave, raters and senior raters have tremendous influence over *why* junior officers decide to leave.** Unfortunately, many leave because of a lack of engaged leadership. Where 50% attrition after fulfilling service obligations still sustains a healthy Infantry population, let's commit to retaining the right 50% of our officer cohorts. Never underestimate the value of communicating how much our young officers contribute to accomplishing all assigned missions. All officers appreciate the wisdom and advice from those who went before them. All officers also appreciate a "pat on the back" and productive counseling and mentorship. Knowing where your junior officers are in their professional timeline is critical to informing their perspective and corresponding decisions on service. Again, leverage the conversation on the margins, and well in advance, of the marketplace.

The first key engagement point for these Officers is 6-12 months prior to the expiration of their initial ADSO (YG plus 3, 4, and 5 years for OCS, ROTC, and USMA respectively). Most officers within this window will decide whether they will PCS to a career course and ultimately command a Rifle company. Others might consider opportunities within special operations or other branches and career fields. As you counsel this population, recognize that some lieutenants enter service with an additional service obligation (ADSO) due to the Career Satisfaction Program (CSP-GRADSO/BRADSO/PADSO).

The next major engagement should occur during the career course or immediately on arrival to their unit of assignment following the career course. Both junior Officers and Raters should familiarize themselves with the Army Talent Management Task Force's Talent Based Career Alignment (TBCA) approach. TBCA seeks to identify exceptionally talented officers in any given cohort of officers, and extend them a unique opportunity to secure a career pathway to high-demand assignments and a more predictable future. TBCA will guarantee high-performing Captains at the Captain's Career Course an Assured Mid-Career Pathway (AMCP) so that, before graduating the Captain's Career Course selected officers will know not just their company-grade KD assignment, but also their follow-on assignment. This combination sets them on a clear trajectory from the Captain's Career Course to the Command and General Staff College.

While most of these talent-based initiatives started within the Officer corps, we must remain adept at developing, coaching, broadening, and enhancing our Noncommissioned Officers as well. While there are similarities in how we develop leaders in both officer and enlisted populations, leaders must understand the specific requirements associated with each group. While Officer career paths align promotion and professional education against Year Groups, advising Noncommissioned Officers on career choices requires an understanding of appropriate billeting and development requirements for the individual based on proponent guidance. Again, among our shared responsibilities for both Officers and NCOs includes educating ourselves fully on officer and enlisted career paths and opportunities.

With respect to our Infantry Noncommissioned Officers, our most dynamic and closely managed enlisted cohort is within our Staff Sergeant population. This is the first period in an NCO's career path where we require Noncommissioned Officers to both meet key developmental requirements as well as fill special assignments and broadening opportunities in accordance with Army priorities. Commanders, and their Command Sergeants Major and First Sergeants, must ensure key development opportunities are both fulfilling and sufficient, while also subsequently providing enhancing opportunities within the generating force. This demonstrates our commitment to our NCO Corps and preserves our true source of overmatch on the battlefield … our Noncommissioned Officers serving in the Squad and Platoon. In the near future, our Noncommissioned Officers will soon have more opportunities to participate directly in their assignment opportunities through the Assignment Satisfaction Key-Enlisted Marketplace. This transition will require additional oversight and mentoring by our leaders to enable our Noncommissioned Officers to make important career decisions and retain the continuity and effectiveness of our units.

While Noncommissioned Officers have less defined timelines associated with Year Groups, it remains equally important to understand when critical engagement points occur in an NCO's career. As with our Officers, Noncommissioned Officers require attention specific to their knowledge, skills, and behaviors to best meet operational requirements, improve Army readiness, and excel in the Noncommissioned Officer Professional Development System. Leaders must understand that Noncommissioned Officers invested in building our next generation of Infantrymen while serving in generating force billets are not disadvantaged. Understanding and implementing the Infantry Career Progression Plan will enable leaders to properly develop Noncommissioned Officers to empower our Noncommissioned Officers to have the maximum opportunity and choice in their service.

At every one of these decision points, we have a responsibility to inspire our top talent to serve. Most of our young Infantry Soldiers choose to serve out of a desire to serve their country, contribute to a greater good, work with strong teams, and to challenge themselves. Few evaluate the merits of their military service solely based on careful analysis of pay scales and benefits. Remind yourself of your own inspiration to continue your service as you engage your junior Officers and Noncommissioned Officers to both inform and inspire them.

I am the Infantry! Follow Me!

USAIS Adopts New Way of Instilling Warrior Ethos in Recruits

FRANKLIN FISHER

Generations of Army veterans are familiar with what's known as the "shark attack" — that shock-and-awe pile-on of shouting and in-your-face personalized commentary visited by bull-necked drill sergeants on new recruits fresh off the bus for basic training. But as far as the U.S. Army Infantry School (USAIS) at Fort Benning, GA, is concerned, the shark attack has had its day.

USAIS has come up with an entirely new approach to the first formative hours of turning civilians into proud members of the Infantry force. Called "The First 100 Yards," it's done on the first day the recruits report to the units they've been assigned to for Infantry One Station Unit Training (OSUT). It was developed earlier this year by the Infantry School and senior NCOs at the 198th Infantry Brigade.

Photo by Patrick A. Albright

Trainees undergoing Infantry One Station Unit Training haul supplies during The First 100 Yards, an exercise on their first day of training at Fort Benning, GA, in October 2020.

The First 100 Yards uses a series of training activities to instill — on the first impressionable day of a recruit's training — the Infantry's core warrior values and attitudes, and to foster pride in the Infantry, partly by drawing on its battlefield history. Details of The First 100 Yards are outlined in a video narrated by the Infantry School's senior enlisted leader, CSM Robert K. Fortenberry.

"We've taken a close look at how we instill the 'spirit of the bayonet' and the spirit of the Infantry, from the first moment our Soldiers arrive here as their initial training event on day one," CSM Fortenberry says in the video.

"It is critical," he says, "that our newest generation of Soldiers have the experience at the beginning of their journey to becoming an Infantry Soldier. This lays the foundation for the next 22 weeks of Infantry training..."

The First 100 Yards puts the new arrivals through a series of activities that include introducing them to the Infantry's history and its "spirit of the bayonet" offensive ethos, as well as a series of mentally and physically demanding activities, which include, among others, a mock battlefield re-supply mission, physical fitness tasks, and a demonstration of the weapons, equipment, and methods Infantry Soldiers use in combat.

The First 100 Yards is designed, says CSM Fortenberry, around the following tenets:

- An understanding and appreciation of the "Spirit of the Infantry," by exposing trainees to physical hardship while also developing "a belief in oneself, belief in your teammates, and a belief in the leaders with whom they serve," he says.
- "Intuitively knowing that when an Infantry leader says, 'Follow me,' that they, the Infantry, will accomplish all missions and defeat any enemy, under any conditions."

Watch CSM Fortenberry's video on The First 100 Yards at https://m.youtube.com/watch?feature=youtu.be&v=hbqOZTRtbkY.

Franklin Fisher works for the Maneuver Center of Excellence Public Affairs Office, Fort Benning, GA.

Frontline Robotics:

Enhancing the Situational Awareness of Junior Leaders through Small Unmanned Aircraft Systems

MAJ CHRISTOPHER W. SANDERS

On 7 November 2004, approximately 10,500 U.S. Soldiers and Marines initiated what would prove to be one of the most dangerous and heavily scrutinized missions of the Iraq War. The task of clearing Fallujah, dubbed Operation Phantom Fury, pitted American and allied forces against well-prepared and highly dedicated insurgent defenders scattered throughout the sprawling urban landscape. For days on end, Soldiers and Marines scoured the city, often pressing ahead without knowing what waited for them around the next corner, in the next room, in the next house, or down the next alleyway. Small unit leaders were often forced to move forward while contending with an extreme lack of situational awareness (SA). The inability of squad and platoon leaders to see their surroundings, visualize the fight before them, and to make decisions based on real-time data introduced elevated risk to an operation already fraught with risk. In the end, 95 U.S. service members lost their lives in the fight for Fallujah and, while it is certainly impossible to mitigate all risk in a combat operation, organic SA assets at the lowest echelons likely would have proved invaluable to mission success and saving American lives. Fortunately for today's Army, efforts are underway to rectify that gap in capability, and the answer lies in the promise of robotics.

The nature of warfare is changing and so too is the fight that we can expect in the future. That does not mean, however, that we can ignore the lessons learned from previous conflicts. The battle for Fallujah taught us much about the complexities of modern warfare and revealed some glaring capability gaps. One of those gaps centers upon the lack of organic SA tools accessible to leaders at the battalion and below echelons — the tactical edge — and proved costly for American forces executing Operation Phantom Fury. More than 15 years later, that gap has not been entirely filled. It is becoming increasingly clear that rectifying this lack in capability is essential. Future conflicts are only going to become more complex, lethal, and dominated by technological innovation.

The fight we are now preparing for will be one against highly capable peer adversaries, and the future operating environment (FOE) will be characterized by an intersection of instability and disruptive technologies that will serve to degrade the comparative advantage in combined arms maneuver that the Army has enjoyed for decades. The results of sending Soldiers to combat today without the ability to accurately see their surroundings in order to gain the time and space to make decisions have the potential to be far more deadly than the results of Operation Phantom Fury in 2004. It is imperative, therefore, that the Army commits to modernization priorities that support the preservation of our tactical overmatch in current conflicts and those to come. Junior leaders should be aware of and begin planning for the integration of the Army's ongoing modernization efforts. One of those efforts is aimed at eliminating the small unit SA capability gap and will be achieved by providing lower echelons across the Army with small unmanned aircraft systems (SUAS). Two SUAS capabilities in particular, Soldier Borne Sensor (SBS) and Short Range Reconnaissance (SRR), will be delivered to formations across the Army in the very near future.

The effective employment of the SBS and SRR capabilities requires an understanding of SUAS fundamentals. An SUAS is a small, light, inexpensive unmanned aircraft capability employed by battalion and subordinate maneuver, maneuver support, and maneuver service and sustainment units to accomplish information collection in reconnaissance and other enabling operations. They enable operators to see and understand the battlefield beyond their visual line of sight — providing an organic reconnaissance and security (R&S) capability that supports information collection at lower echelons. When employed at the squad and platoon levels,

Photo courtesy of author

The Soldier Borne Sensor weighs less than six ounces and excels in highly complex and restrictive environments.

SUAS greatly enhance the SA of our leaders and enable freedom of maneuver while reducing risk to the warfighter. As such, militaries worldwide are identifying the value of SUAS and are actively exploring how to best employ them to gain tactical and operational advantages.

The SBS is a squad-level asset that is currently being fielded to infantry, cavalry, and engineer squads across the Army. A highly effective SA and "quick look" tool, the SBS minimizes transportability burdens on the Soldier through weight minimization. The air vehicle weighs less than six ounces, and the total system weight is less than three pounds. The SBS provides SA to one kilometer yet excels in highly complex and restrictive environments. It reduces a squad's exposure to potential threats and enhances freedom of maneuver by providing actionable information to support decisions at the lowest echelon. The SBS enables infantry squads to surveil target areas, develop a scheme of maneuver, and enhance survivability in and out of enemy contact. For scout squads, SBS provides the ability to surveil danger areas and areas of interest in the performance of reconnaissance or screening tasks both in and out of enemy contact. Squad leaders who train with and employ SBS are certain to enhance the combat effectiveness of their squads. Furthermore, the SA gained at the tactical edge will contribute to the overall success of higher echelons by driving decentralized decision-making and expanding leader initiative.

The SRR is a platoon-level UAS that the Army will begin fielding to infantry, armor, cavalry, engineer, chemical, and special operations forces in 2021. It is capable of flying for more than 30 minutes at a range of three kilometers. SRR provides the warfighter with enhanced SA and a standoff capability in urban and complex terrain, enabling accurate reconnaissance and the detection and acquisition of targets of interest. This capability allows the platoon to engage the enemy at a time and on terrain and conditions favorable to the platoon. For scout formations, the SRR identifies enemy reconnaissance or security elements and follow-on enemy forces during R&S missions to enable the platoon to target and defeat them, allowing the supported unit to maneuver out of contact or remain undetected from enemy ground reconnaissance elements. It is critical that platoon leaders understand these operational benefits of SRR and maximize their effects through deliberate usage across a varied array of mission sets. The end result will be the development of platoons that are more lethal and safeguarded from unnecessary risk.

To be sure, the advantages of fully integrating SBS and SRR into a wide range of operations are many. Providing improved SUAS capabilities at the small unit level enables leaders to organically obtain timely and actionable intelligence while preventing a reliance on the limited assets of higher headquarters. As a result, leaders at lower echelons are able to quickly gather and assess the information needed to act decisively in any circumstance. The SBS and SRR capabilities provide mounted and dismounted squad and platoons with the ability to conduct reconnaissance and collect information about conditions and enemy activities taking place beyond line of sight. They enable leaders at these echelons to use the information gained to enhance their awareness and understanding of the conditions and to develop the situations immediately faced. The information that can be gained through the dedicated and deliberate employment of SBS and SRR systems also informs a common operating picture that leaders use to develop SA. Ultimately, the SBS and SRR capabilities are combat multipliers. They are tools that enable small units to overcome limitations presented by terrain and circumstance, such as those seen in Operation Phantom Fury, and quickly employ capabilities forward to increase the forces' influence across larger portions of assigned areas of operation.

Photo by Tad Browning

An Experimental Force Soldier hand-launches a Short Range Reconnaissance SUAS during operational testing at Fort Benning.

The ability of our adversaries to compete with us on the battlefield — across all domains — has never been greater. We simply cannot expect success in fighting tomorrow's conflicts with yesterday's tactics, weapons, and equipment. We should make no mistake that our adversaries understand this and are moving out rapidly to capitalize on ever-advancing technologies wherever possible. We must do the same in the arena of SUAS and so many more. Platoon and squad leaders, those at the tactical edge of the fight, must prepare for and embrace the tremendous combat multiplying capabilities provided by systems such as SBS and SRR. Maintaining our long-standing tactical overmatch in the conflicts to come is at stake.

For more information on SBS or SRR, or the Army's SUAS Strategy in general, contact MAJ Christopher Sanders at christopher.w.sanders.mil@mail.mil.

MAJ Christopher Sanders serves with the Robotics Requirements Division of the Maneuver Capabilities Development and Integration Directorate at Fort Benning, GA.

Pioneers Leading the Way:

1st Battalion, 29th Infantry — The Army's Premier Lethality and Force Modernization Battalion

1ST BATTALION, 29TH INFANTRY REGIMENT

"The art of war is simple enough. Find out where your enemy is. Get at him as soon as you can. Strike him as hard as you can, and keep moving on."

— GEN Ulysses S. Grant

Winning matters. Winning requires decisive lethality directly at the point of contact. The 1st Battalion, 29th Infantry Regiment (Pioneers) is the functional lethality training battalion at Fort Benning's U.S. Army Infantry School (USAIS). The Pioneer Battalion provides seven programs of instruction (POIs) that forge tactically and technically competent leaders on platforms specific to their operational formation. In addition to building winning lethality for the Army through training and developing its force, the Pioneers directly contribute to Army modernization through experimentation. Partnering with the Maneuver Battle Lab (MBL), a specialized force within 1-29 IN conducts experimentation and testing of emerging technologies to support the Army Futures Command and shape the fieldings for the future force. The Pioneer Battalion excels in shaping the U.S. Army of the future, training leaders, and strengthening interoperability mission sets on a global scale — we lead the way. To achieve this, 1-29 IN is composed of five companies, each charged with a unique mission set contributing directly to our Army's lethality. Collectively, these five companies represent the elements responsible for shaping the future infantry force from the ground up.

Alpha Company

"It's the infantry, still today, that suffers 70 to 80 percent of the casualties. I want those kids to have the best, bar none, with nothing held back — We owe it to them."

— GEN Mark Milley
20th Chairman of the Joint Chiefs of Staff

Alpha Company is the Army's premiere Experimental Force (EXFOR), the only unit of its kind dedicated to conducting experimentation on future Army equipment and directly informing force modernization. The mission of this unique organization includes two large-scale expeditionary experiments which are executed in concert with our counterparts in the United Kingdom. The EXFOR is dedicated to ensuring our Soldiers at the tip of the spear are equipped to win in any environment, present and in the future.

The Army Expeditionary Warrior Experiment (AEWE) is the Army's primary venue for small unit modernization, providing the operational experiment to support both concept and materiel development. The insights from AEWE

Photo by Janet Sokolowski

Members of the Experimental Force from Alpha Company, 1st Battalion, 29th Infantry Regiment, move into an area they've just scouted with use of a small drone.

inform new concepts, organizational constructs, training methodology, and the integration of prototype capabilities into an operational environment. Such an undertaking spans six months of intense experimentation of more than 60 separate technologies over which the EXFOR is expected to exhibit mastery. AEWE culminates with a week-long force-on-force exercise, where a combined EXFOR and British force employs the emerging technologies against a thinking enemy. The outcomes of this event, and a similar one conducted in the United Kingdom, translate into recommendations to the most senior leaders in the Army reference equipment, manning, training, and organizational structure. 1LT Juwan Gaul, one of the platoon leaders in A Company, noted, "Our goal is to be just as proficient as any platoon in a Forces Command (FORSCOM) unit. We do this by remaining focused on executing the fundamentals well. We strive to remain proficient in the execution of infantry tactics while keeping up with the experimentation requirement of MBL. We have exceptional training and experimentation events planned for the future, and the platoon is excited about the impact we have on the Army." The EXFOR emerges from its mission with some of the only Soldiers in today's Army with actual hands-on experience of the most conceptual and developmental technologies out there.

In addition to large-scale expeditionary requirements, the EXFOR conducts an average of 20 separate experiments per year. While the scale of these experiments is small, the impacts are far-reaching. These experiments represent an extraordinarily wide range of skills from platoon power generation and the Soldier Enhancement Program to frequencies on new radio platforms. During a recent organic precision-strike experiment, the EXFOR tested various tactics for employing the Switchblade, a miniature high-precision strike tactical missile system which is attached to an unmanned aircraft system (UAS). Other recent experiments included the Tactical Decision Kit featuring the Integrated Visual Augmentation System (IVAS) as well as autonomous UAS swarming and logistical resupply operations. To drive effective Army modernization, these experiments require an agile, adaptable, and tactically sound EXFOR.

Bravo Company

"The strength of the team is each individual member. The strength of each member is the team."

— Phil Jackson

Bravo Company directly supports the USAIS by providing critical support for training and exercises at the Maneuver Center of Excellence (MCoE). Its mission is to facilitate four courses focused on developing leaders: the Bradley Leader Course (BLC), Stryker Leader Course (SLC), Bradley Master Gunner Course (BMGC), and Infantry Basic Officer Leader Course (IBOLC). Bravo Company is primarily composed of NCOs who are responsible for maintaining and sustaining a battalion's worth of Bradley Fighting Vehicles (BFVs) and Stryker variants vehicles. By employing these vehicles as a part of BLC and SLC, Bravo Company helps forge officers and NCOs of character prepared to lead lethal formations across the maneuver force.

Bravo Company provides the crews to support field training exercises (FTXs) and live fires during BLC and SLC training, providing leaders valuable experience in leading maneuver formations. For newly minted lieutenants in IBOLC, Bravo Company provides exemplary BFV crews as part of its mounted operations FTX. After an initial familiarization and capabilities brief, the BFV crews integrate into troop leading procedures with the future platoon leaders and then execute missions during a culminating training exercise.

Infantry Basic Officer Leader Course students learn how to incorporate Bradley Fighting Vehicles into the attack.
Photo courtesy of 2nd Battalion, 11th Infantry Regiment

Photo by EJ Hersom

Army Sniper School graduates set up a camouflage demonstration at Fort Benning on 28 February 2019.

Bravo Company is also integral to supporting BMGC. When asked about Bravo Company's support of the course, SFC Shawn Moran, one of the company master gunners, stated, "Bravo Company's support to the Bradley Master Gunner Course consists of highly trained crews capable of qualifying on Gunnery Table VI in accordance with the Individual Weapons Training Strategy (IWTS). The company provides the M2A3 vehicle platform and qualified crews to facilitate Bradley Master Gunner students to execute what they learned in the course."

Photo by SGT Timothy Hamlin

A student from the 2nd Cavalry Regiment completes a small arms transition qualification as part of the Marksmanship Master Trainer Course on 1 August 2019.

Charlie Company

"Blessed are those who, in the face of death, think only about the front sight."

— Jeff Cooper, USMC Retired

Charlie Company builds small arms combat-focused lethality by leading both the U.S. Army Sniper Course (USASC) and Marksmanship Master Trainer Course (MMTC).

The USASC is a seven-week course that trains students to an expert level on the employment of the M2010, M110, and M107 sniper weapons systems. USASC graduates are experts in sniper fieldcraft, mission planning, reconnaissance, and employment of indirect fires. Currently the Sniper Course has two major initiatives: updating Sniper employment and training doctrine for large-scale combat operations and the start of the One Station Unit Training (OSUT) Sniper Assessment Program. The OSUT Sniper Assessment Program creates an OSUT-to-Sniper pipeline, molding snipers directly out of newly graduated Soldiers. Both initiatives are key to warfare as they provide unit commanders additional tools to kill the enemy in any environment.

The MMTC is a five-week course designed to turn senior NCOs into marksmanship master trainers. Phase 1 of this course focuses on fundamentals of individual marksmanship. During this phase, students are trained on the shot process, effective employment of the M4 carbine, M249 automatic rifle, and M17 pistol. Students are also trained to engage targets out to 600 meters with iron sights,

using day, night, and thermal optics. Phase II of the course focuses on engaging targets using advanced marksmanship techniques, understanding unit training management, and effectively coaching others to become better shooters. This phase culminates with students developing comprehensive battalion-level IWTS nested with the Army's new marksmanship doctrine (Training Circular 3-20.40, *Training and Qualification – Individual Weapons*). MMTC remains at the forefront of the Army's fielding and testing of new marksmanship equipment. Integrated into the POI are the M17 Pistol Aiming Light (PAiL) system, binocular night-vision devices, and the Mantis X dry-fire training system. Graduates leave MMTC fully trained on the next generation weapons systems and fully prepared to train, coach, and mentor the next generation of Soldiers upon returning to their unit.

Delta Company

"Once we have a war there is only one thing to do. It must be won. For defeat brings worse things than any that can ever happen in war."

— Ernest Hemingway

Delta Company leads three courses — the Bradley Leader Course (BLC), Stryker Leader Course (SLC), and Heavy Weapons Leader Course (HWLC). By leveraging the knowledge of master gunners and expert tactical instructors, Delta Company mentors young Infantry and Armor leaders poised to assume leadership roles in the operational units of tomorrow.

Photo courtesy of Stryker Leader Course

Soldiers in the Stryker Leader Course complete simulations training.

Graduates of BLC are technically and tactically proficient in maintaining, operating, and employing a mechanized infantry platoon or company. BLC prepares graduates to confront many of the challenges experienced on the battlefield. The rigors outlined in the new course curriculum readily challenge students' ability to defeat a thinking enemy in a field environment. Our new curriculum also tests students' ability to successfully employ the BFV under simulated combat conditions, which builds confidence and fosters success in the future. A recent graduate of BLC noted that the course has provided him the opportunity to receive the requisite training needed to be successful in an armored brigade combat team (ABCT). He also added that his comfort level drastically increased based on his ability to conduct the gunnery skills test (GST), execute a live-fire training event, and physically maneuver the BFV.

The second course facilitated by Delta Company is SLC. Similar to BLC, SLC has undergone a curriculum revision that added additional rigor to the course. The new course POI also reinforces the importance of properly employing and maintaining the Stryker vehicle. Students now have the opportunity to tactically employ the Stryker against a thinking enemy, validating what they have learned during the course. While the counterinsurgency doctrine remains relevant in many parts of the world, feedback from the field and new threats continue to shape what's being taught to students. This course adjustment reveals the dexterity of the POI to pivot towards the next war. CPT Christian Mendez, a recent graduate, highlighted, "I judge Stryker Leader Course on whether or not the information we learned makes us better at what we do… closing with and destroying our adversaries. This course excels in this endeavor! Additionally, it leverages the experience of knowledgeable cadre to instill the lessons learned in operational units across the globe."

The third and final course facilitated by Delta Company is HWLC. HWLC graduates are combat multipliers for unit commanders. The course increases lethality for units at the battalion and brigade level. The course also empowers leaders with the requisite knowledge to build heavy weapons training plans and the hands-on experience to employ heavy weapons. A recent HWLC student, SSG Gregory Morgan, noted, "The most beneficial aspect of the course was our ability to leverage the instructors' experience and receive hands-on training using actual equipment. I enjoyed the competition and simulations!"

In addition to training leaders, Delta Company manages the Bradley New Equipment Training Team

(NETT), a team of experts responsible for the fielding and implementation of new and existing Bradley platforms throughout the Army.

The Bradley NETT provides training for various units undergoing modernization across the Army. Most recently and critical to the success of Army modernization, the Bradley NETT facilitated the successful conversion of 1st Stryker Brigade Combat Team, 1st Armored Division (Fort Bliss, TX) to 1st Armored Brigade Combat Team, 1st Armored Division. The conversion included the fielding of 200 Bradleys and providing the critical training needed to enable the ABCT to perform its critical mission which includes sustaining and employing the vehicle.

Echo Company

"That is the whole secret of successful fighting. Get your enemy at a disadvantage; and never, on any account, fight him on equal terms."

— George Bernard Shaw

Eagle Company leads the Combatives Master Trainer Course (CMTC) and the Small Unmanned Aerial System (SUAS) Master Trainer Course (SUAS-MT). This company is the only organization within the Army that implements and trains the latest advances in either of these areas of expertise.

CMTC is integral to instilling the Warrior Ethos, skills, and confidence in warfighters. With modern Soldiers becoming increasingly technical in their field and hybrid threats arising against our force, it is paramount to ensure we retain the requisite tasks to close with and destroy the enemy in the last five meters of the fight — if needed through hand-to-hand combat. The primary initiative of the program is the introduction of tactical scenarios used to forge Soldiers in the crucible of simulated combat. CMTC enhances combat readiness by building Soldiers' personal courage, confidence, and situational responsiveness to close quarters threats. The course increases these attributes across the Army by building master trainers. CMTC instructors are also responsible for tournaments as well as the All-Army Combatives Championship, the Lacerda Cup. During tournaments we employ realistic and demanding scenarios to simulate the stresses of combat. By using simulations of close combat, impact reduction suits, and other training aids, we are better able to assess and modernize our training methodology while achieving individual Soldier lethality.

SUAS-MT is a course designed to impart the skillsets required to manage battalion and below operational training program (OTP) for UAS, train new operators, and develop and administer flight evaluations. The first initiative taking place in the SUAS-MT course is to maintain pace with emerging technologies, specifically in the employment of Class A UAVs which traditionally operate at relatively low altitudes. SUAS-MT is the only course of its kind.

We are involved and support institutions showcasing and developing new technologies. The experts of the SUAS-MT participate in the concepts development community to evaluate and test emerging ideas such as rucksacks designed for carrying UAS and future counter-UAS capabilities.

Photo courtesy of 1st Battalion, 29th Infantry Regiment

Students in the Combatives Master Trainer Course grapple during the tactical phase of the course at Fort Benning.

Conclusion

"Out of every one hundred men, ten shouldn't even be there, eighty are just targets, nine are the real fighters, and we are lucky to have them, for they make the battle. Ah, but the one, one is a warrior, and he will bring the others back."

— Heraclitus

1-29 IN is a trusted team of teams that forges lethal leaders for our Army. The Pioneer Battalion is not only the Army's premier functional training unit, but we are also at the cutting edge of modernizations efforts, both in areas of technical development and tactical employment. Whether it's testing new UAS systems, improving long-range precision weapons, providing critical input for the Bradley M2A4 development, re-aligning POIs with the most recent doctrine updates, or pushing the tactical capabilities of new weapon systems, 1-29 IN does and will continue to represent the best the USAIS has to offer.

In parallel to executing its assigned missions, the Pioneer Battalion understands the importance of continuous leader development and Soldier occupational proficiency. All five companies ensure their Soldiers and leaders leave 1-29 IN ready to bring their next unit the highest level of technical and tactical expertise and professionalism. According to CPT Ryan Goodin, Bravo Company commander, "There is danger in allowing both Soldier and leader skills to atrophy as they support POI. We take advantage of the leadership courses within the battalion and MCoE to make them better leaders and Soldiers in any maneuver formation."

1-29 IN builds winning lethality at the point of contact — winning matters. To maintain this mission, the Pioneer Battalion needs to continue its tradition of having the most technically and tactically proficient leaders in its formation, so it can build lethal leaders of tomorrow. For it is their expertise, knowledge, capability, and sheer grit which drive the future and truly build winning lethality. Be a part of a winning team.

Company Mortars at JRTC

CPT BRANDON HARP

Recent observations of company-level employment of mortars and indirect fire assets at the Joint Readiness Training Center (JRTC) at Fort Polk, LA, have shown that company commanders and platoon leaders fail to deliberately integrate mortars into their plans. Observer-coach-trainers (OCTs) noted that company commanders training at JRTC often failed to integrate indirect fires into their troop leading procedures from the beginning of planning, which resulted in an inability to mass fires on the defense, a loss of tempo on the offense, as well as overexposure of their indirect fire assets to enemy forces.

When employed effectively, a company's organic 60mm mortar squad provides timely and accurate fires capable of disrupting or suppressing an enemy. When not utilized in a tactically sound manner, a mortar system becomes yet another direct fire weapon system that adds little to the achievement of the mission. On many occasions, indirect fires become an afterthought to troop leading procedures; instead of being integrated into a plan from the beginning, the maneuver plan is crafted first and only then are any kind of fires laid on targets.

In order to achieve success at JRTC and beyond, it is necessary to not only understand the capabilities of the weapon systems organic to an infantry company but also know how to best employ these systems and ensure their survival. The primary role of mortars, according to Army Techniques Publication (ATP) 3-21.90, *Tactical Employment of Mortars*, is to provide a maneuver commander with immediately available, responsive, and both lethal and nonlethal indirect fires. This article is intended to address common failures of integrating mortars in an operation's planning process.

Integrate Indirect Fires into the Plan from the Beginning

In a defense, mortars are used to support defensive operations and to suppress or destroy enemy-supporting weapons, disrupt enemy troop concentrations, destroy an enemy conducting close dismounted assaults, and to regain the initiative, according to ATP 3-21.90. A well-thought-out engagement area that incorporates obstacles and direct fire weapon systems is less effective if it does not also integrate

Indirect fire Infantrymen conduct a direct alignment fire mission during qualification tables at Fort Bragg, NC, in preparation for a Joint Readiness Training Center rotation.

Photos courtesy of author

indirect fires as well as provide multiple dilemmas to the enemy. OCTs at JRTC have observed this failure on numerous occasions across a wide variety of rotational training units (RTUs). On one such defensive occasion, a company commander, who had directed the emplacement of each of his company positions, cut off his organic 60mm mortars due to the proximity of his obstacle belt to friendly firing positions. Due to this decision, he was unable to bring his own indirect assets into the fight as his obstacle was within the risk estimate distance of an anti-tank weapon position. Integrating indirect fires into the plan from the beginning would have solved this issue and prevented the company from having an ineffective defense that ultimately resulted in the entire company being overrun.

A 60mm mortar base plate digs into the ground due to poor soil conditions.

Synchronizing indirect fires with obstacles and direct fire weapon systems is crucial to gaining fire superiority over a near-peer threat as seen at JRTC. By incorporating both direct fire and indirect fire systems as well as a well-thought-out obstacle, you can present an enemy with multiple problems simultaneously that will result in a loss of tempo for their attack. While a 60mm mortar is incapable of destroying enemy armored formations, it can be very effective at disrupting dismounts as they attempt to lead their vehicles around a well-planned obstacle.

Successful employment has also been observed at JRTC, such as a company commander employing his 60mm mortars for a predetermined final protective fire (FPF) to protect a planned withdrawal. His company had been tasked to destroy enemy engineer assets prior to the main battalion defense and then withdraw to preserve combat power. After accomplishing his task, he called for fire using his 60mm mortars on the enemy dismounts that were moving towards his position. These fires dissuaded the enemy from pursuing his company and he successfully withdrew. The planned FPF achieved its intended purpose and allowed his company to preserve combat power in accordance with his battalion's defense plan.

In the offense, company mortars can be used to set the conditions for the assault and provide suppression for maneuvering forces. Company-level mortars are especially useful in providing close supporting fires for the assault. In theory, every assault should incorporate planned fires on an objective, with multiple firing points as needed to support maneuvering forces. In practice at JRTC, this is not what OCTs observed; companies assaulted objectives without planned indirect support, using their mortars in handheld mode to attack targets of opportunity. This reliance on handheld fires ultimately stems from not incorporating the indirect fires into the plan from the beginning. According to OCTs, some of the best examples of indirect fire employment in the offense were from the British troops training at JRTC alongside American forces. In every single assault, they had preplanned targets before, on, and after each objective as well as echelonment of fires, allowing continuous suppression of the objective while they maneuvered in the assault. This level of planning is what is supposed to be done on the offensive yet oftentimes is overlooked or minimized in favor of direct fire engagements.

Select Appropriate Mortar-Firing Positions

As a company commander, you are ultimately responsible for the tactical employment of your mortar section, the use of supporting indirect fire, and local security for the mortar section. Too often indirect fire Infantrymen are told to establish a mortar firing position (MFP) in the middle of a large helicopter landing zone (HLZ) or other open area due to a lack of understanding of the specific need for type of mask clearance and overhead clearance to fire. OCTs have seen many company and even battalion MFPs that needlessly exposed mortars to risk or were simply unsuitable for supporting their element with indirect fires. The most important factor for MFP selection is mission accomplishment. It is rather hard to accomplish the mission when enemy aerial reconnaissance spots the MFP in the middle of a clearing and calls in its own indirect fire missions on friendly forces.

When selecting a site for your mortars to occupy, look for positions in defilade from the objective. This will provide the mortar squad with mask from direct fires from enemy positions and provide protection from field guns and low-angle howitzer fire. The squad leader will check overhead clearance and mask clearance before emplacing the guns and can clear obstructions if necessary. Once a protected MFP has been

established, effort must be taken in order to improve survival. This is accomplished through the construction of a ground-mounted, dug-in mortar position. Construction of this mortar pit is undertaken in three stages, and if dug by hand can result in an exhausted mortar crew. If time and resources allow, allocate engineer dig assets to the construction of a mortar firing pit. A mortar crew firing from defilade in a protected mortar pit can continue supporting the maneuver forces even when receiving direct and indirect fires from the enemy. If no engineer assets are available to assist in digging a mortar pit, consider assigning personnel as METT-TC (mission, enemy, terrain and weather, troops and support available, time available, and civil considerations) dictate to help dig in the mortar firing point to prevent exhaustion of your indirect fire team.

In addition to defilade, consideration must be made to distance and routes that have been selected to the objective. Prior to movement, establish mortars in a location that provides one-half to two-thirds maximum range forward of the line of departure and move them forward as needed. With proper planning, a company mortar team can support the company through all phases of an operation. Mortar squad leaders should be able to assist in appropriate site selection and ranges for their ammunition.

The optimal method of employing fires at JRTC and beyond is through preplanned fires from a protected MFP. Resorting to direct alignment or direct lay should only be done when one does not have the opportunity to establish a proper MFP as conducting either of these types of missions places your indirect fire assets at much greater risk. If your indirect fire Infantrymen can see the enemy, the enemy can see your mortars and will likely employ whatever means it has available to suppress or destroy your indirect fire capabilities. When absolutely necessary, choose direct alignment over direct lay to minimize exposure of friendly forces. Neither of these methods should be relied on as a first resort, however. The use of preplanned targets both increases the effectiveness of your indirect fires as well as keeps the Soldiers in your command safe to continue the fight.

Educate Your Lieutenants and NCOs

The level of formal education on indirect fire systems gained from institutional instruction at the Infantry Basic Officer Leaders Course (IBOLC) and Maneuver Captains Career Course (MCCC) is lacking in the hands-on department, which results in leaders who do not have the experience and knowledge to actually employ these systems effectively. There is a wide differential in knowledge obtained from sitting through a PowerPoint presentation as opposed to observing firsthand the processes and effects of an indirect weapon system. One way to achieve this is through the use of walk-and-shoot ranges, allowing subordinates to grow accustomed to calling for fire and observing the effects of a real fire mission. As a company commander, you can ensure that the junior officers within your formation are better familiarized with mortar systems and employment. Send your platoon leaders to a mortar range during the mortar tables to observe the process of a call for fire under live-fire conditions. Platoon leaders who understand the employment of mortars will be able to assist in integrating mortars in company plans and will result in fewer burdens placed on you as a company commander.

Conclusion

Success at JRTC and beyond means knowing and effectively employing your company's organic and available assets. Integrating indirect fires into the plan from the beginning of an operation results in synchronized and effective fires. Identifying suitable firing points results in increased survivability for company mortars, while proper training and education in garrison allows for full utilization of company assets. Ultimately, the successful implementation of mortars relies on integrating them into your plan from the beginning rather than being purely reactionary with your systems.

Indirect fire Infantrymen teach junior leaders about the 60mm mortar system.

CPT Brandon Harp currently serves as a team senior observer-coach-trainer with Task Force 1, Joint Readiness Training Center Operations Group, Fort Polk, LA. His other assignments include serving as executive officer in Headquarters and Headquarters Company, 1st Battalion, 505th Parachute Infantry Regiment (PIR), 82nd Airborne Division, Fort Bragg, NC; and heavy mortar platoon leader, heavy weapons platoon leader, and rifle platoon leader in 1-505th PIR.

Developing a Generation of Combat-Ready Leaders:

Why BCTs Must Conduct Fire Support Coordination Exercises

COL KEVIN WILLIAMS
MAJ JOHN MEYER

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

— MG George S. Patton Jr.
Address to the 2nd Armored Division
Fort Benning, GA, 8 July 1941

Replicating the realistic nature of combat is critical to maintaining relevance and readiness within the Army today. At the brigade combat team (BCT) level, nothing is more important than developing our leaders and building lethal companies, troops, and batteries (C/T/B) to increase readiness as a force. In the 2nd Infantry Brigade Combat Team (IBCT), 25th Infantry Division, we decided executing a fire support coordination exercise (FSCX) was a critical piece to that evolution and training path. BCTs must invest the time and energy to plan, resource, and execute an FSCX to develop C/T/B leadership, build combat readiness, and to ensure quality multi-echelon training at each level.

First, it is important to understand what an FSCX is. For many years, Infantrymen called an FSCX a "walk and shoot," an operation where leaders would walk through a range while controlling indirect fire systems through a designed

A mortar team with 2nd Squadron, 14th Cavalry Regiment, 2nd Infantry Brigade Combat Team, 25th Infantry Division, sends rounds downrange during a fire support coordination exercise on 19 November 2019 at Pohakuloa Training Area in Hawaii.

Photos by SGT Thomas Calvert

mission scenario. Traditionally, an FSCX is focused on training and evaluating fire support personnel only. Our brigade's plan focused on the development and evaluation of the maneuver commanders along with their fire support personnel. The FSCX is a leader development exercise involving the maneuver and control of direct and indirect fires along with echelons above brigade (EAB) assets. Prior to outlining the justification for the FSCX, the planning and execution of the operation are outlined below.

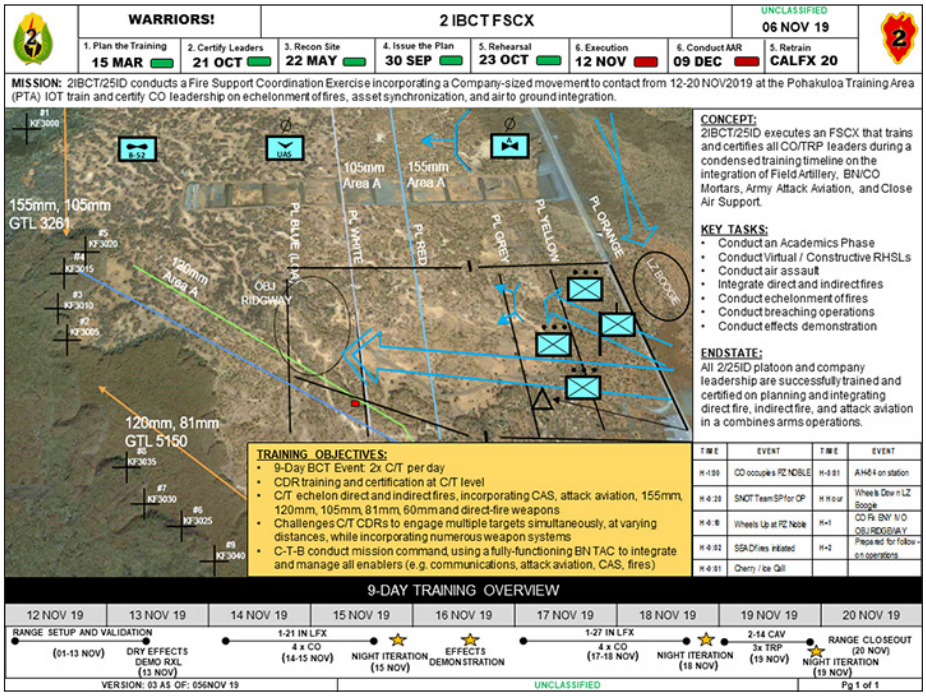


Figure 1 — 2/25 IBCT FSCX Concept of Operation

Planning the FSCX

Approximately eight months prior to execution, the brigade commander gave his intent on the design of the exercise. The staff immediately launched into deliberate analysis and a planning process to determine the path to execution. The first three months focused on the design of the operation and range as well as the support requirements at a conceptual level of detail. The final five months of preparation moved the staff from conceptual to detailed planning, including weekly in-progress reviews (IPRs), multiple reconnaissance trips to the island of Hawaii, and the complete development of the live-fire exercise (LFX) range. Our commander's intent was to develop an FSCX that included every organic indirect system within the brigade, while including available attack aviation, air assaults, and U.S. Air Force (USAF) assets. This required the staff to design a range that allowed the impact of munitions just outside of danger close, which is defined doctrinally as just outside of Area A (maneuver limit of advance per munition) (see Figure 1).The brigade commander wanted company/troop (C/T) commanders to have the flexibility to determine which assets to use throughout the range. That meant designing safety danger zones (SDZs) with overlapping weapon system limits of advance (LOAs). For example, if an enemy mortar platoon presents itself, C/T commanders could potentially employ their organic mortars, call for fire with brigade artillery, or direct AH-64 attack helicopters to engage the target. Building SDZs for all weapon systems at a danger close distance was a critical and time-consuming part of the planning process. In the end, we found this was a geometry problem based on the gun target line between the location of the position area artillery (PAA)/mortar firing point (MFP) and the location of the designated target. The brigade staff developed tremendously through the detailed planning and execution of this operation and gained incredible knowledge in fires planning and asset employment considerations.

Execution: 12-20 November 2019

The brigade executed the FSCX at Pohakuloa Training Area (PTA) on the island of Hawaii. This range allowed for the inclusion of all organic mortars, artillery, attack aviation, and live USAF B-52 Stratofortress sorties. The operation occurred over a 10-day period where each battalion/squadron was given two days to execute its portion of the FSCX. Two companies executed the FSCX each day with one selected for a night operation. Prior to the start of each battalion's iteration, the brigade staff and brigade commander led a tactical exercise without troops (TEWT). The TEWT began at the start of the range and ended at the LOA. The brigade staff covered safety requirements, locations of direct and indirect fire targets (TGTs), and the LOA for each weapon system.

Three weeks prior to execution, the companies/troops received the tactical operations order and attended an academics week. This allowed all units to arrive to the FSCX with a deliberate plan and baseline knowledge of indirect fire tasks, air-to-ground integration, and maneuver concepts. Task organization for each C/T was platoon sergeant (PSG) and above, all C/T fire support teams (FiST), a two-man sniper team, and a 12-Soldier weapons section led by a weapons squad leader (approximately 38 Soldiers per C/T). The weapons section forced the maneuver commander to simultaneously control direct and indirect fire weapon systems in addition to a multitude of external assets. The external assets available to the commanders included attack aviation, low level voice intercept (LLVI) team, electronic warfare, Puma small unmanned aircraft system (UAS), and a Shadow (medium UAS). Each battalion executed a TEWT, which was led by the brigade commander and staff. The TEWT was the only opportunity to walk the range before executing live, which made this operation a "cold-hit" live fire, meaning no dry or blank fire iterations were conducted. We mitigated the risk by observing all C/T combined arms rehearsals (CARs), conducting the battalion TEWT, utilizing pre-command captains as observer-controller/trainers (OC/Ts) assigned to each platoon, and minimizing direct fire

systems to only the 12-man weapons section. The greatest mitigation/control measure was executing the operation through the brigade tactical command post (TAC). The TAC consisted of the following personnel: brigade commander/command sergeant major (CSM), fire support coordinator (FSCOORD), operations officer (S3), intelligence officer (S2), fire support officer (FSO), and the brigade aviation officer (BAO). The brigade commander and S3 controlled the operation, pace of injects, and complexity. On separate exercise control (EXCON) nets, the brigade FSO cleared all indirect missions prior to their execution, and the BAO did the same for AH-64 missions. During fixed-wing iterations, the USAF joint terminal attack controller (JTAC) walked with the brigade commander and S3 to provide oversight and control.

Each iteration began in pick-up zone (PZ) posture at the designated PZ six kilometers from the range. Four UH-60s from the 25th Infantry Division Combat Aviation Brigade (CAB) flew the C/Ts to the helicopter landing zone (HLZ) located at the start of the range. We used a "play book" with a number of injects assigned to a designated TGT on the ridgeline (see Figure 2). The play book had a total of 26 injects and was carried by all OC/Ts and the brigade TAC controlling the mission. To illustrate the process, the brigade commander would call an OC/T walking with a platoon and assign an inject number. For example, Inject 4 was a Boyevaya Mashina Pekhoty (BMP) section at TGT Number 5. This prompted the OC/T to verbally tell the platoon leader/sergeant (PL/PSG) they were receiving effective fire from a BMP section and visually orient them to the target on the ridgeline. The PL/PSG and the forward observer (FO) would then plan the fire mission and call it up to the C/T commander and FSO. This process would continue from the beginning to the completion of the range at the LOA. The further a unit maneuvered down the range, the fewer assets were available to use due to SDZs. At the beginning of the range, the C/T commander had all mortars, artillery, and attack aviation available. At the LOA, the commander could only mass the effects of 60mm, 81mm, 120mm, and attack aviation. The most effective commanders managed their round allocation and were able to mass systems/assets simultaneously. The range had three groups of dismounted targets to stimulate direct fire and increase complexity for the commander. Every iteration ended with a 45-minute after actions review (AAR) to discuss sustains and improves.

Overall, we found C/T commanders did a very good job planning and preparing for the operation. The C/T CARs were thorough, included all enablers and JTACs, and most used injects to simulate the perceived intensity of the operation. The commanders who chose to fight the enemy and not get fixated on the echelonment of their fires plan tended to perform much better. Overwhelming feedback during AARs was an underestimation of the difficulty managing the complexity of the operation. Frankly, the commander-first sergeant (1SG)-FSO teams were overwhelmed synchronizing the direct/indirect fight and the reception/processing of multiple simultaneous fire missions.

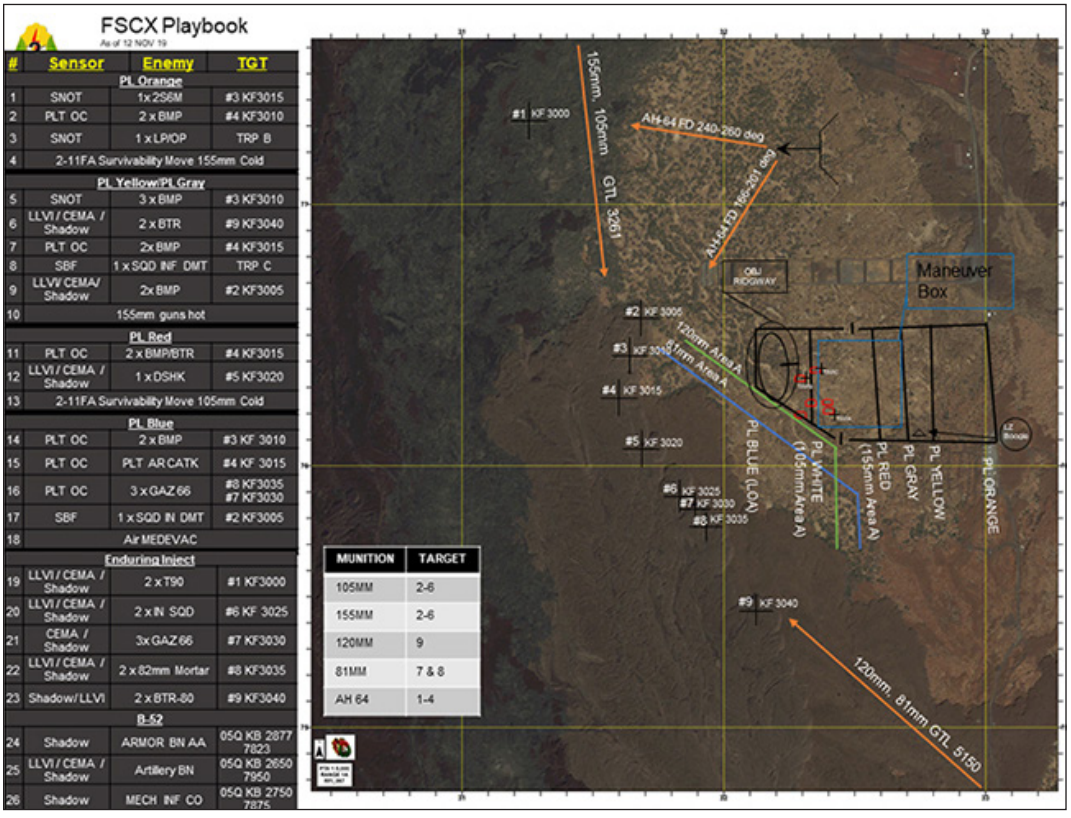
Justification

Developing Leaders: The FSCX was justified as the brigade's primary leader development event for the fiscal year; it allowed the brigade commander to focus on all his priorities:

1) Leader development,
2) Lethal C/T/Bs and battalions,
3) Combat readiness, and
4) Team building.

The brigade envisioned the FSCX as a critical building block for leaders progressing to external evaluations, combined arms live-fire exercises (CALFEXs), and the brigade combat training exercise (CTE). This operation taught leaders how to mass effects at the decisive point, tactical capabilities of joint fires assets, command and control, and most importantly the ability to solve complex problems under intense live-fire conditions. The brigade commander continually talks

Figure 2 — 2/25 IBCT FSCX Playbook



A Soldier with the 2nd Infantry Brigade Combat Team, 25th Infantry Division plans out fire missions during a fire support coordination exercise on 19 November 2019 at Pohakuloa Training Area.

to leaders about developing and becoming adaptive, flexible officers and NCOs who are prepared to lead our country's Soldiers to win in battle. This exercise was designed to test this very concept. The brigade leadership passionately believed combat should not be the first time junior leaders should control echeloned assets, feel and see the effects of large munitions at close range, and be placed under a tremendous amount of stress. As an example, the first time many of the senior leaders within the brigade experienced live ordnance drops from an aircraft was in combat as young officers and NCOs.

The FSCX set conditions to apply intense pressure on the formation through a multitude of real and notional injects. At times, C/T commanders were receiving fire missions from three different platoon leaders on three different targets, and they were able to effectively engage these TGTs with three different assets. Complexity and confusion are natural in combat, and it was our goal for every commander to experience similar conditions during the exercise. The brigade commander viewed the operation not only as an evaluation but, more importantly, as a learning experience for every leader in the brigade. If a commander was doing well, the brigade commander would increase the complexity while keeping the scenario to a manageable level. No leader should be comfortable during the execution of an FSCX or any other training mission. The playbook was a key tool to empower the brigade commander to control the pressure on a given C/T commander.

In addition to the primary training focus of fire support coordination at the C/T level, the brigade also planned an effects demonstration in the middle of the 10-day training event. Every C/T/B commander and 1SG, as well as all brigade and battalion staff officers, were required to attend the demonstration. The purpose of the effects demonstration was twofold:

- Establish a baseline knowledge of the fundamentals of suppress, obscure, secure, reduce, and assault (SOSRA) at echelon; and
- Synchronize breaching, direct fire, indirect fire, and attack aviation at the decisive point.

The brigade S3 acted as the maneuver commander of a notional element which included a sapper platoon and heavy weapons section. Unlike the C/T-evaluated iterations, the effects demonstration included a mine-wire breach with bangalores and a live mine-clearing line charge (MCLIC) detonation. As we maneuvered through the lane, an S3 staff captain narrated the events unfolding on an FM radio net monitored by all leaders walking behind the demonstrators. With the aid of several staff officers who also provided OC/T support, we controlled the movement of the audience to the edge of Area A prior to initiating suppression missions. This occurred for every munition from 60mm mortars all the way through attack aviation 30mm and 2.75-inch rockets. The FSCX allowed the brigade commander and staff to deliberately coach, teach, mentor, and evaluate all C/T commanders within the organization. This was a tremendous learning experience for all leaders involved, whether evaluating, serving as an OC/T, or simply walking along as an observer.

Build Combat Lethality: The FSCX significantly increased the combat lethality of the brigade staff and maneuver leaders. Most combat veterans experience the employment of fires from direct, indirect, and aviation assets in urban or mountainous terrain. One goal of the FSCX was to build the combat readiness and "experience" within the organization. Undoubtedly, 2/25 IBCT is more prepared to fight and win in war upon completion of this operation. C/T commanders controlled and delivered munitions from all mortar systems, 105mm and 155mm artillery cannons, AH-64s, and live bomb drops from B-52s. These leaders better understand the employment, capability, and effects of these weapon systems.

Today's operational environment forces leaders to solve problems through a joint lens. The FSCX involved the inclusion of the 25th Air Space Operations Squadron and B-52s from the 96th Expeditionary Bomb Squadron out of Guam. Every C/T commander was assigned a JTAC team with early inclusion during the planning process and CAR. For most of the leaders, this was the first time they had worked

with the USAF and certainly the first time controlling live bomb drops. All echelons, from brigade staff to the platoon leaders on the line, are better trained from the integration of our USAF brothers and sisters in the exercise. The partnership will only increase lethality heading into the brigade's Joint Readiness Training Center rotation and any future worldwide deployments.

Through the innovative work of the brigade S2 shop and the brigade engineer battalion (BEB), we worked manned-unmanned teaming (MUM-T) with the B-52s and our organic Shadows. Delta Company, 65th BEB successfully executed the first MUM-T between the RQ-7B and B-52. The UAS platoon coordinated and planned with the USAF JTACs assigned to 2/25ID to assist in the delivery of munitions. The UAS platoon successfully performed a TGT laser spot with the B-52s to provide the 25th Infantry Division and Pacific Air Force's (PACAF) first off-board laser spot track between the Army's RQ-7B and B-52s. This allowed 2/25 IBCT and PACAF to increase understanding of joint capabilities and integration in a multi-domain operational environment. After two sorties and 14,000 nautical miles of transit, the JTACs and Shadow UAS were able to deliver 15,000 pounds of live munitions, both dumb and laser-guided, onto target. This was a significant feat, captured by the USAF and included in Air Force Academy and *Business Insider* publications.

Commanders were forced to simultaneously control direct and indirect systems. As described in the introduction, the ability to mass effects is a critical task involving both the science and art of leadership. To be musicians of Mars, as stated by Patton, our commanders must understand and employ all weapons at the right time, on the correct target, and with the proper asset. This typically required commanders and FSOs to prioritize which targets, based on the high pay-off target list (HPTL), were serviced first. Often, our commanders processed fire missions in the order received, not on servicing the most lethal enemy threat first. For example, some commanders would fixate on completing the fire mission on an enemy mortar section while waiting or not acknowledging the enemy BMP platoon initiating fires on them. This also involved understanding the effects of a given munition. Utilizing 105mm or 120mm on enemy tanks or BMPs is probably not the right choice if one has attack aviation or 155mm dual-purpose improved conventional munition (DPICM) available. Through the design of the range, commanders were able to simultaneously mass effects from 120mm, 81mm, and attack aviation with 2.75-inch rockets and 30mm from the LOA. This taught leaders the true capabilities of weapon systems, both organic to the brigade and those found in echelons above. Too often the science behind a combat operation is overlooked or taken for granted. C/T commanders along with their FSOs constructed plans to utilize and echelon all weapons systems accounting for capabilities and minimum safe distances.

Lastly, inclusion of the CAB was critical to the quality of the operation. C/T commanders controlled AH-64s for the entirety of the operation. Due to the gun target line, they were forced to decide when to commit attack aviation and when to hold them back while employing indirect fire systems. Air assault operations were a secondary training objective for the FSCX, but we found significant development and learning

A gun team with 1st Battalion, 27th Infantry Regiment "Wolfhounds," 2nd Infantry Brigade Combat Team, 25th Infantry Division, lays suppressing fire during an FSCX on 17 November 2019. The FSCX is one of the most realistic training events offered, allowing junior leaders to gain practical experience with calling coordinated fire missions and observing fires effects when paired with a maneuver element.

Soldiers with the 1st Battalion, 27th Infantry Regiment observe incoming fires effects during an FSCX on 18 November 2019 at the Pohakuloa Training Area.

in this area. As an IBCT, all leaders must be comfortable conducting air assault planning and execution. All C/T CARs included lift and attack aviation pilots, which increased shared understanding and added tremendous training value.

Multi-Echelon Training: In a given fiscal year, limited opportunities exist for brigade and battalion staffs to operate together in a simulated combat environment such as the FSCX. It is critical to maximize every collective training event to achieve the most training objectives possible. In addition to the typical shoot, move, and communication tasks, 2/25 IBCT continually encourages inclusion of multi-echelon mission command training. We used the FSCX to exercise multi-echelon training from the company to brigade level. This included a full workout for battalion/squadron current operations staffs and the brigade tactical operation center (TOC). The brigade TAC controlled the fight on the lane and included the brigade commander/CSM, S3, S2, FSO, and BAO. The brigade executive officer (XO) controlled the current operations (CUOPS) floor and handed off the fight to the TAC once the live fire and air assault conditions check were complete.

The warfighting functions at all echelons were fully employed at every opportunity. All fire missions were called through the fires cell in the battalion and brigade TOCs. The brigade controlled and de-conflicted the airspace (UAS/rotary wing/fixed wing), ground assets, medical evacuation (MEDEVAC) operations, and the air assaults. Each iteration included real-world signal intelligence through the LLVI teams, electromagnetic warfare emitter, and PUMA/Shadow flights.

The focus of the FSCX was the evaluation and development of the maneuver commanders, but the ancillary training across all mission command echelons was invaluable. This was a building block event for the staffs in preparation for the upcoming CTE and Combat Training Center (CTC) rotation.

Counter-Argument

The organizational energy to plan, resource, and execute an FSCX is significant. This will consume the planning efforts with the brigade staff for months on end. The decision to commit to such an operation is further hindered by risk aversion, complexity of range construction, and the fact that class V ammunition is not allocated within standards in training commission (STRAC) per Army guidelines.

Risk and Range Construction

The process of designing the range and SDZs for danger close munitions was as valuable as the operation itself. The artillery battalion and brigade staff learned a tremendous amount developing the framework of the range including the locations of TGTs, PAAs, MFPs, dismounted TGTs, and the edge of Area A. One goal of the effects demonstration was to move the observers as close to every munition as possible within Army regulations. The science behind the design of the range is what allowed the brigade to execute this mission within an acceptable mitigated risk level. Assessing this event as critical to combat preparedness, the brigade commander was willing to accept calculated risk to put our Soldiers through a realistic, demanding, and stressful training environment. Only through such rigor and complexity will we get the most out of our leaders and build trust and confidence in our equipment, Soldiers, and abilities.

Range construction is an important step in the planning and execution of the FSCX. Working with range control and division leadership, the brigade emplaced five metal vehicle hulks that were visible from the start of the range. Explosive Ordnance Disposal (EOD) cleared the impact area, and 25th CAB emplaced the hulks as sling loads. Next, brigade planners and range control added steel and pop-up targets to stimulate the direct-fire and sniper engagements. This range is now set up to support future organizations conducting FSCXs, CALFEXs, anti-armor training, or a multitude of additional uses.

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Ammunition Considerations

A brigade-run FSCX is not built into the ammunition STRAC for the fiscal year, and the amount of ammunition needed to adequately execute this operation is immense. To accomplish the FSCX, we laid out our ammo allocation for the year and prioritized Department of Defense Identification Codes (DODICs) that were needed for the operation. Next, the brigade staff met with all battalions to lay out the impact on their training events, specifically platoon LFXs and motor certifications. The FSCX prioritized high-explosive rounds, meaning the battalions were forced to execute LFXs utilizing mostly full range training rounds (FRTRs). Through bottom-up refinement and careful analysis, we concluded that we had enough ammunition to accomplish all brigade and battalion collective training events. The cost was the amount and type of indirect ammunition the battalions would get allocated for the fiscal year.

Conclusion

In summary, the FSCX is a critical event in the training progression of a brigade combat team. It is a baseline operation that supports all collective training events leading the formation to a CTC rotation and combat deployment. The FSCX is a critical training event that will develop leaders, train staffs, build combat lethality, and encourage multi-echelon training.

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Soldiers with 1st Battalion, 27th Infantry Regiment "Wolfhounds," prepare to hit the lane during an FSCX on 17 November 2019 at Pohakuloa Training Area in Hawaii.

Electromagnetic Spectrum Survivability in Large-Scale Combat Operations

CPT JEREMY HOFSTETTER
CPT ADAM WOJCIECHOWSKI

The command post tent is buzzing with concurrent planning and operational tracking. With faces painted, vehicles camouflaged, camo nets carefully laid over all the equipment, and everything concealed in the wood line, everything is seemingly ready for the start of another rotation at the Joint Multinational Readiness Center (JMRC) in Germany. In many conventional aspects, units such as those training at JMRC might feel like they have done everything possible to obscure themselves from the opposing force (OPFOR), but they have done little to no deliberate masking of the tremendous electromagnetic signature given off by signals equipment and digital mission command systems. As the unit conducts mission planning, the OPFOR has already detected the electromagnetic emissions generated from the cluster of antennas attached to the tactical operations center (TOC) vehicles and cell phones in every Soldier's pocket. OPFOR is quickly homing in and targeting the training unit's command post.

Photo by SGT Matthew Hulett

Soldiers from the 173rd Airborne Brigade adjust a portable antenna during Exercise Allied Spirit VI at Hohenfels Training Area, Germany, on 20 March 2017.

The U.S. Army has a wealth of experience operating in an environment where it possesses overwhelming electronic warfare (EW) dominance. During the years of war in Afghanistan and Iraq, the U.S. did not have to worry about these methods of attack. But, the conflicts the Army now prepares for encompass threats with peer/near-peer capabilities. Some of the Army's greatest assets that facilitate constant communication and a never-ending stream of position location information now present pronounced liabilities.

This became a stark reality for Ukrainian forces fighting against Russia in eastern Ukraine's Donbass region. Russia was able to effectively detect, jam, and destroy Ukraine command posts using their EW platforms.[1] During 20-plus years of counterinsurgency warfare, the U.S. Army's focus on its EW practices and procedures waned. As the Army transitions to fight in large-scale combat operations against peer/near-peer threats, units must equip, train, and fight in an EW-contested environment.

A prime contender in the EW realm is Russia as it uses its current operational environments to test and train this experience. In the article "The Russian Edge in Electronic Warfare," Madison Creery states that Russia is at the forefront of EW innovation and use according to many experts in the field.[2] Their experience in EW began during the 2008 Russo-Georgian War, where they suppressed Georgia's air defense systems through jamming.[3] After the loss of numerous aircraft, Russia prioritized EW modernization. This effort resulted in 80-90 percent of EW equipment modernization and in 2009 the creation of dedicated EW units.[4]

Russia, as part of its strategy to mitigate vulnerabilities in other areas, has and will continue to invest heavily in EW equipment. For instance, the Borisoglebsk-2 system is capable of jamming mobile satellite communications and radio navigation units. This system, used in Ukraine, impedes the usage of drones by blocking incoming GPS signals. At the center of Russia's electronic countermeasure arsenal is the Moska-1, which is able to monitor electronic emissions within a 400-kilometer range on all frequencies; this system is able to both gather intelligence and conduct jamming and

electronic suppression whenever needed.[5]

Several Russian systems specifically inhibit enemy systems in order to gain tactical and strategic superiority. The Krasukha-2 not only has the ability to analyze signal types and jam radar, but it can also provide a false target to the jammed system.[6] The Krasukha-2 has the ability to spoof GPS signals, providing false locations to GPS receivers.[7] During the Ukrainian conflict, Russia used electronic warfare systems to both fix positions for artillery strikes and facilitate psychological operations by targeting Ukrainian soldiers' cell phones with negative text messages.[8]

Russia has built its military strategy around maximizing its EW assets, whereas the U.S. has seldom considered the effects of electronic warfare in its doctrine, equipping, or planning at tactical levels. In 2015, COL Jeffrey Church, then chief of the Army's Electronic Warfare Division at the Pentagon, explained the gap between the U.S. and Russia as such:

> "The Russians train to it. They have electronic warfare units, they have electronic warfare equipment that those trained soldiers use, and then they incorporate it into their training. We do not have electronic warfare units, we have very little equipment, and we do very little electronic warfare training. It's not that we could not be as good as or better than them, it's just that right now we choose not to."[9]

Although western powers still hold a broad-spectrum technological advantage over Russia, it is clear that Russia views electronic warfare as a force multiplier that will negate western and particularly U.S. superiority. Russia allows its EW assets to permeate all levels of command whereas in the United States nearly all EW assets reside at echelons above division.

Dealing with a contested EW environment is a challenge with the current training environments and recent conflicts. In Iraq and Afghanistan, EW was primarily used on a very limited scale to defeat the triggering mechanisms for roadside bombs and later in the conflict to disrupt insurgent communications when attempting to call for reinforcement during an attack. The first time U.S. forces contended with peer/near-peer EW capabilities was when members of a special-purpose Marine task force deployed to Syria in 2018.[10] The head of U.S. Special Operations Command, GEN Raymond Thomas, called Syria "the most aggressive electronic warfare environment on the planet from our adversaries. They are testing us every day, knocking our communications down, disabling our EC-130s, etcetera."[11]

At JMRC, large-scale combat operations scenarios are commonplace; however, the rotational training unit may rarely consider peer/near-peer electronic warfare. Units commonly home in on refining that which they are most comfortable with, namely traditional kinetic threats. The bulk of planning and preparation occurs within the comfort zone, and minimal, if any, emphasis for planning against or mitigating the EW threat transpires.

Brigade and battalion TOCs normally focus on visual camouflage but overlook concealment of their electromagnetic footprint. Compounding the problem, command and control (C2) for many brigade combat teams can be highly dependent on digital systems that emit electromagnetic signatures. Trends at JMRC show a heavy reliance on FM radios, satellite communications and navigation, and commercial off-the-shelf WiFi devices. This highlights the issue with the need to leave personal cell phones behind. Furthermore, cell phones can lead to unsecured means of communication when more conventional means of communication seemingly fail.

One way to mitigate the usage of our digital-aged "easy button" is to implement mandatory communications exercises prior to field immersion of the training environment. A unit's lack of comfort across the board with seamless shifting between the primary, alternate, contingent, and emergency (PACE) communication methods seems to stem from the lack of planning and practice of its PACE plan. Often, the unit presents the scheme of mission command but rarely conducts communications exercises at home station or immediately prior to a JMRC rotation in an environment that physically presents challenges far superior to motor-pool terrain. Lacking preparation, trends tend to one of two general outcomes: cell phone usage or an almost complete

Photo by CPT Joseph Legros

A Soldier assigned to the 1st Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade, conducts a radio check during Saber Junction 2019 on Germany on 22 September 2019.

shutdown of the current operations cells while the S6 shop "fixes the problem."

Another noticeable trend at JMRC is that electromagnetic masking rarely makes the list during the planning phase when selecting TOC locations. In fact, it is usually quite the opposite; TOCs end up at locations with the best line-of-sight for FM communications. Trends additionally show that the execution intent for retransmission (RETRANS) is to saturate as much terrain as possible. Moreover, many radios are set to the highest power setting possible, regardless of the distance of the receiving station. This simplifies the problem of mission command, as establishing communications with another station can be difficult even during the best of times. The unintentional consequences of these oversights are the opportunity for the OPFOR electronic warfare teams to exploit unmitigated targeting opportunities likely essential to their high-payoff target list.

It is recommended that units take steps to camouflage their electromagnetic footprint similar to the effort placed on their visual signature. Simple mitigation techniques such as placing antennas on the side of a hill to provide maximum exposure to friendly forces but limit line-of-sight to the enemy will cut down on electromagnetic signatures.

Similarly, it is a common trend for units to place large amounts of antennas near or even attached to their TOC. While this makes setup quicker and reduces the visible physical signature, it has the opposite effect on the electromagnetic footprint. It is a good practice to place antennas as far away from the TOC as possible. Consider using equipment such an antenna multiplexer to reduce the number of antennas needed, further reducing the electromagnetic footprint.

Just as units practice poor behaviors masking their electromagnetic signature with the use of FM, they also tend to practice poor procedures when operating the equipment. Broadcasts are often long in duration, allowing enemy EW teams ample time to target the transmission. Furthermore, the use frequency hopping is normally good at the onset of a rotation, but as the exercise carries on and communications security becomes compromised, units have a tendency to abandon their standard operating procedures and begin transmitting in single-channel mode to overcome multiple challenges of synchronizing across the unit. Operating in the open submits communications to many enemy systems that can effectively listen, locate, and therefore, target the origin of the signal.

Satellite-based communications are also widely used during rotations at JMRC, most notably tactical satellite (TACSAT), Joint Battle Command Platform (JBCP), and Warfighter Information Network-Tactical (WIN-T), all of which are vulnerable to jamming. A common trend witnessed when there is an upper tactical internet denial is that the S6 section spends much of its time troubleshooting equipment and little to no time analyzing the possibility of a cyberattack or satellite blocking attack. In fact, at the battalion level there is little means of detecting this kind of attack, and lower echelons are dependent on higher levels to provide this information.

It is recommended that units take steps to ***camouflage their electromagnetic footprint similar to the effort placed on their visual signature. Simple mitigation techniques such as placing antennas on the side of a hill to provide maximum exposure to friendly forces but limit line-of-sight to the enemy will cut down on arrant electromagnetic signatures.***

Units and, by assumption, many Soldiers rely heavily on GPS (commercial and standard issue) for positional information. Rarely do units train or set requirements to operate in a satellite-denied environment. In many cases, units lack the equipment readily available to operate in a digitally degraded environment. To compensate for digital degradation, trends show an increase in analog proficiency for systems. Often, units understand that analog tracking is the medium that is not as susceptible to enemy attack. Maintaining synchronization across digital and analog mediums will continue to be a linchpin for success in mitigating digital degradation.

A final trend relates to cell-phone usage, which is often deemed essential in the day-to-day lives of most Americans, and unfortunately, this carries over to the battlefield. It is common during rotations to regularly see or otherwise know that Soldiers utilize their personal electronic devices. This presents an EW problem as none of these devices offer military encryption. Most of these devices emit electromagnetic signatures, which expose the user to targeting much easier than military equipment. Cell phones are also a vulnerability that can be used by an enemy to send psychological operations messaging directly to soldiers, as witnessed in Ukraine. Clearly cell phones are a liability on the battlefield; this prompted the commander of the 82nd Airborne Division (among others that visit JMRC) to order paratroopers to leave personal phones, computers, and all electronic devices behind when the unit received an alert for a short-notice deployment to the Middle East amid escalating tensions with Iran.[12]

The United States has allowed its EW expertise to atrophy during the years of war in Afghanistan and Iraq, while potential threats seized upon the opportunity to use electronic warfare to their advantage. By observing the conflict in Ukraine and elsewhere, it is apparent that EW will play a significant factor in shaping the battlefield in any future near-peer or large-scale operation. The U.S. must be competitive in the EW arena; this will take an investment in training, equipment, and a fundamental change in the way the military conducts ground operations. Planning and consideration for EW must be taken into account at the tactical level. EW will be a decisive domain in future battles, and the U.S. must be ready.

Notes

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Preparing a Company for Property Book Split and Deployment

CPT SUNGKUYN "EDDIE" CHANG
CPT PATRICK DORR
MAJ CHRISTINA SHELTON

In the summer and fall of 2019, Battle Company, 1st Battalion, 32nd Infantry Regiment, 1st Brigade Combat Team, 10th Mountain Division, conducted an intense training cycle over the course of five months that included individual and collective training events and culminated with a decisive action rotation at the Joint Readiness Training Center (JRTC) at Fort Polk, LA. The transition from the culmination of our training events to deployment preparation was onerous. As the company commander and company executive officer (XO), we had a unique opportunity to observe and lead the company through this intense training cycle and deployment to Afghanistan in support of Operation Freedom's Sentinel (OFS). We will tackle in detail the conditions that must be set to conduct a successful property book split, best practices and systems that will assist with property management, and advice for property pack-out procedures.

During our initial planning stages, we spent some time going over the mission requirements, which drove the equipment needs, and figuring out the key tasks for property book split and pack-out. There are elements to this planning process that involve many echelons above the company and battalion level and require assistance from the brigade, so understanding the company fight is paramount to successful implementation. The main things that are within the company's control are the identification of the rear detachment hand-receipt holder, identification of what property will deploy, an inventory of all of the property, and the proper documentation to accompany both forward and rear property as well as the hand-receipt holders.

A critical element to setting conditions for a successful property book split is the selection of a rear detachment leader who will be entrusted with the proper care and custody of government property. You must pick someone you trust; otherwise, things in the rear will become a forward problem. When you pick someone and leave him/her behind as the rear detachment leader, it should hurt the organization that is going forward. The rear detachment NCOIC will integrate with the commander and XO as they go through their inventories to become a subject matter expert of the rear equipment and understand the responsibility. The rear detachment leader should receive training on basics of Global Combat Support System – Army (GCSS-Army) and property management in order to enforce the Command Supply Discipline Program (CSDP).

The next requirement for the company is to identify what equipment will actually deploy. The Army publishes a modified table of organization and equipment (MTOE) that generally lists what a unit is supposed to be equipped with to be an effective fighting force. However, we understood that it would not be necessary to bring all items on our MTOE/property book with us. We analyzed our mission set in theater and balanced that against the theater-provided equipment (TPE) and equipment table of distribution and allowance (ETDA) that was supplemental to our organizational property. We ensured that the analysis of our organizational property and the planning process included not only the commander and the XO but also the platoon leaders and platoon sergeants to ensure we had what we thought we needed for the mission. In hindsight — like most units that prepare for deployment — we over-packed and brought a lot of equipment that we probably could have left in the rear. We quickly recognized that the radios we had brought were not necessary due to the large number of radios on the TPE/ETDA books. We recommend conducting a detailed mission analysis with the forward unit and tying their feedback into the planning process to understand what you do or do not need to bring forward.

After analyzing our operational requirements, we developed a concept of operations for our property book split. This essentially mimicked the level of detail equivalent to a change-of-command inventory schedule with the requisite

PRO TIP: It's important that you keep a list of technical manuals (TMs) you use on a memorandum for record (MFR) so that new identified shortages that come from this layout are annotated as "TM Update" shortages and not shortages caused by liability on someone's loss/damage. When in doubt, write an MFR that describes exactly what happened with the items. Damage statements from JRTC were common.

PRO TIP: During inventories, we used BOMs and technical manuals (TMs) together. BOMs will sometimes have extra items that do not apply to certain pieces of equipment (useable on-code). TMs will also have items that BOMs will not list (TM Updates/BOM not up to date). For example, the TM for the PRC-152 shows three different end items because they share very similar components. It's important that you use the correct useable on-code to identify the BII that matches with the end item.

time for updating paperwork such as bills of materials (BOMs) and inputs into GCSS-Army.

Before the inventories began, we set the conditions to ensure a physical separation between forward and rear property in order to maintain proper accountability. To that end, we made a separate room in one of our cages, and the rear detachment NCOIC solely owned the keys. With that space, he could inventory the items, label and secure the basic issue items (BII)/end items as necessary in a tough box (or in the arms room/commo room, etc.), and safeguard them from forward property. Simultaneously, our platoon leaders, platoon sergeants, and squad leaders attended the inventories for forward equipment and created DD Form 1750s with tough boxes to secure the equipment. As the rear detachment NCOIC inventoried all of the rear items he would keep, he made notes, and at the end of each day, he stayed an extra 1-2 hours to annotate everything correctly on consolidated BOMs by like items. He identified what those items were correctly on paper and ensured that his own rear detachment sub-hand-receipt holders knew exactly what they were going to receive and subsequently sign for. In addition, we formed a property team consisting of our unit supply specialists (92Ys), armorer, commo NCO, and other members of the headquarters to ensure attention to detail was applied to every piece of equipment and associated document. This was very important to ensuring success as it set conditions for the rear detachment. No one went home until the rear detachment NCOIC and the aforementioned property team rectified all inventoried items and completed BOMs.

Another important part of splitting the property and packing out is to identify the BII that although belongs to forward end items we would leave in the rear. We recognized certain items' BII were not necessary for their functionality (for example, the PVS-14's BII — green bags, ammo cans, eyecups, etc.). We created a BOM for what items would stay in the rear and signed the BOM from the commander to the rear detachment NCOIC. The NCOIC then locked up the extra BII, organized it in neatly labeled bags/containers, and placed the items in a tough box with a DD Form 1750 on top. We secured the tough boxes with a lock so the rear detachment could protect and keep track of the BII for end items going forward.

Once in theater, the unit must conduct a detailed reconciliation of its equipment. Though the process sounds very straightforward, we made some mistakes. As the operational environment changed, we ran into issues and had to adapt the way we continued our CSDP and accountability of equipment. When we arrived in theater, we ran into a multitude of problems that included delays in flights, COVID-19 restrictions, newly imposed quarantine timelines, and a change of mission — all of which had a profound impact on the movement and accountability of equipment. Not unlike most deployment experiences, everything we had expected and planned for changed within hours.

To tackle this problem set, we operationalized layouts as well as checked BOMs against the layout of the items. Attention to detail was extremely important as NCOs and Soldiers identified BII/obscure items that were hard to understand from a picture in a technical manual (TM). We combined our armorer's knowledge and our supply clerk's expertise on the obscure items — we used pictures and phone calls to confirm the BII/equipment status. We annotated the BOMs to reflect the physical locations of the items.

Lessons Learned and Best Practices/Techniques

1. Place arms room items (weapons, optics, lasers, etc.) on platoon hand receipts/storage location (SLOC) in accordance with the master authorization list (MAL). Having the items on an officer's hand receipt adds a layer of protection for the commander and allows the XO and first sergeant to identify the ownership of MAL items. An accurate MAL makes it easy to identify which serial numbers are forward, rear, or in a sensitive item (SI) container. The majority of SIs are hand carried by the individual users, and the remaining items go in the SI container. The armorer and supply specialist should be responsible for packing the majority of the SI container, but a competent squad leader needs to run the pack-out and a PL needs to handle the 1750s. An accurate MAL will also feed proper maintenance procedures because platoon sergeants know which serial numbers are their responsibility. Squad leaders need to sign for all of their squad's weapons, lasers, optics, etc., and then hand receipt it to the team leaders. Then the team leaders sub-hand receipt the equipment to the end user (with heavy squad leader supervision). NCO ownership of property management will greatly assist in understanding what components of end item (COEI) and BII they are responsible for and ensure they are maintained properly.

2. Identify the mission requirement versus MTOE: It is

important to understand that although there is an MTOE not all of those items will go on a deployment. Most deployed units will sign for TPE/ETDA books — we recommend getting a copy of this hand receipt so you can verify what you will be inheriting. We highly recommend all units make a standing list (updated monthly) annotating which items will go forward and which items will stay in the rear in preparation for deployment. Subsequently, we recommend preparing DA 1750s and hazardous material (HAZMAT) declarations for each container. Finally, we highly recommend setting aside a day to conduct a rehearsal of the actual load-out — without this rehearsal, waiting until the last day to try to fit everything into a container will quickly expose the lack of space/proper methods of transporting equipment.

3. Recommend Commander's Property Book contains:

a. The consolidated BOM for each item.

b. Consolidated BOM for each SLOC with a specific national stock number (NSN) (i.e., show which items were signed to each hand receipt holder).

c. TM with BII, COEI, and additional authorization list (AAL).

d. Cover sheet with picture(s) of the item; picture(s) should show the full layout of BII labeled. This is super important for items with unfamiliar names/obscure description or which have pictures in the TM that are hard to recognize.

4. Other notes:

a. Each rear detachment commander/hand-receipt holder needs to have a location and a way to segregate and lock up the equipment that they sign for.

b. Understand human geography as well as the importance of attention to detail in supply teams, a systems-oriented company XO, and the need for putting discipline back into the CSDP from the commander level.

c. Cross-coordination with battalion unit movement officer (UMO) teams and brigade mobility teams is important; understanding hard deadlines is key to backwards planning. (Try to adhere to one-third/two-thirds rule; it takes a lot of time and patience to inventory and pack everything correctly)

d. Have a leader professional development session on how to properly annotate BOMs — this is a huge issue with Soldiers and NCOs who don't understand the outlining/scratching/writing a zero vs. quantity, etc.

e. BOMs — When we talk sub-hand receipts, use BOMS and TMs to sub-hand receipt down the equipment. Some BOMs are incomplete and confusing; use a 2062 and submit a ticket to fix the BOM if you run into an issue.

An accurate MAL will also feed proper maintenance procedures because platoon sergeants know which serial numbers are their responsibility. Squad leaders need to sign for all of their squad's weapons, lasers, optics, etc., and then hand receipt it to the team leaders. Then the team leaders sub-hand receipt the equipment to the end user (with heavy squad leader supervision).

Conclusion

Splitting the property book into forward and rear halves is an important step in setting conditions for a successful deployment. The key elements to streamline this transition period with effective G-Army practices are effective planning with NCO involvement, correctly identifying the necessary equipment needed for deployment, careful management of the inventory and accounting processes, proper pack out procedures, and a detailed reconciliation once in theater.

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PRO TIP: Company MAL is a sacred document. No one should have access to edit or change this besides the trusted few (XO and armorer). If you change something on the MAL, this is a major commander's critical information requirements (CCIR)-level information — otherwise you risk not understanding where your serialized items are located.

Task Force Contain:

Brigade Combat Team COVID-19 Operations

MAJ MICHAEL D. APRIL
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MAJ DANIEL P. BRADY

In March 2020, the 2nd Infantry Brigade Combat Team (IBCT), 4th Infantry Division stood up Task Force (TF) Contain in response to the Coronavirus Disease (COVID)-19 pandemic. The mission of TF Contain was to minimize the spread and mitigate the effects of the disease on Fort Carson, CO, and the surrounding community. The uniqueness of this mission was the operationalization of public health activities by an IBCT ordinarily tasked with a much different mission set. Few of the brigade's key leaders had experience with this type of fight, but TF Contain was successful due to the integration of medical expertise with the operations staff and process. This article includes the task organization ultimately utilized by TF Contain as an example for other infantry units tasked with similar responsibilities, a likely possibility given the interconnected nature of today's world and the ability of the military to quickly mobilize in response to an array of challenges.

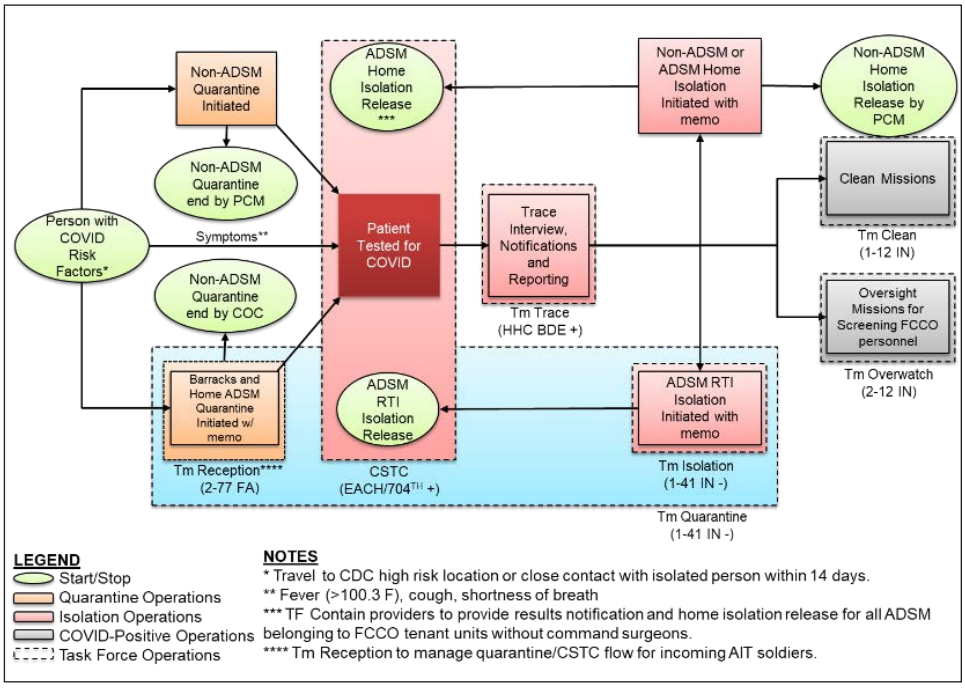
Overview

The principal mission of TF Contain was to address and close any capability gaps for tenant units unable to execute required actions in response to COVID with organic assets. The end state for these efforts was to treat Soldiers and preserve the readiness of the fighting force. This required considerations related to not only active-duty service members (ADSMs) but also non-ADSMs whose interactions with Soldiers had important implications for disease spread to include dependents, retirees, Department of Defense (DoD) civilians, and contractors. The TF was also mindful of the fact that a sharply increasing rate of infection could lead to civilian leaders reaching out for medical expertise, equipment, and facilities.

Planning efforts focused on the command, clinical, and public health actions required to mitigate and suppress the spread of COVID throughout the installation. These actions included restriction of movement to quarantine for persons with any COVID-related risk factors. Risk factors included recent travel to high-risk locations as defined by the Centers for Disease Control and Prevention (CDC) and close contact (greater than six minutes of interactions within less than six feet) with confirmed COVID-positive cases. For individuals developing symptoms consistent with COVID infection (including fever, cough, shortness of breath), actions included movement to the installation Medical Activity (MEDDAC) for diagnostic screening, testing (upon which these individuals became persons under investigation), and subsequently isolation. Isolated persons required a deliberate process for isolation release. Finally, public health interventions to mitigate and suppress disease spread were necessary based on the identification of locations or activities apparently associated with increased COVID risk (see Figure 1).

Utilizing lessons learned from COVID-response efforts at other locations, the TF identified that the key roles that needed to be performed were providing space for quarantine and isolation of personnel considered high risk, mitigation of the spread in public places and key facilities, cleaning of locations where the virus was likely to spread, and support to health care facilities. The latter role turned into not only providing

Figure 1 – Task Force Contain Operations Overview



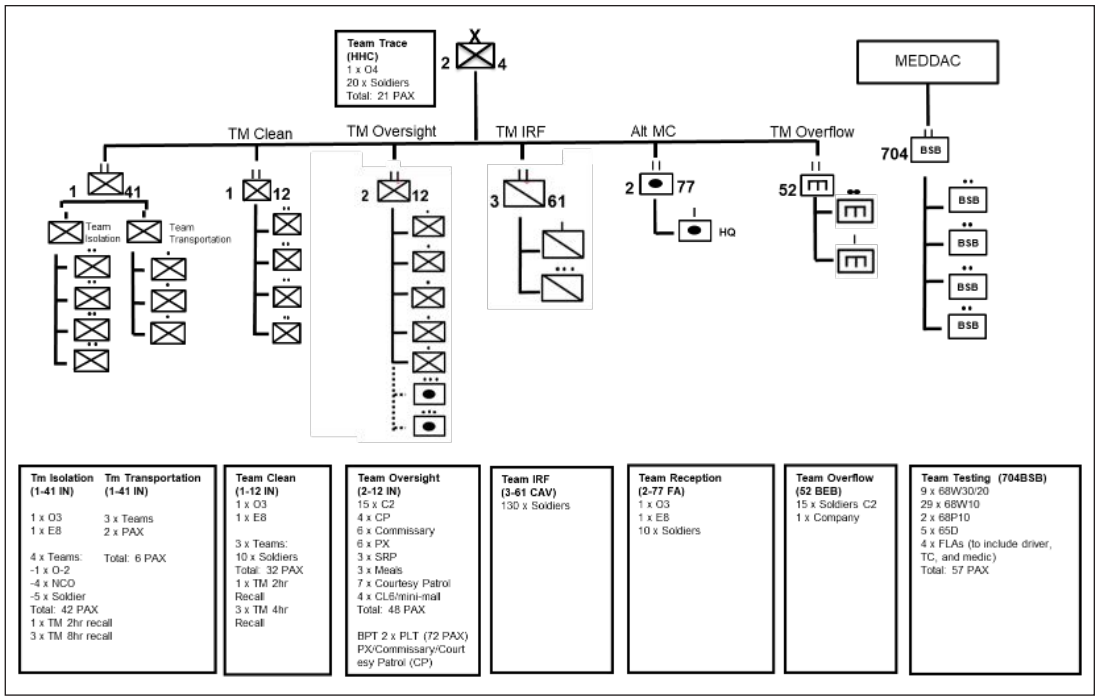


Figure 2 – Task Force Contain Task Organization

medical support, but trace activities to notify personnel and leadership of possible high-risk personnel and locations. The TF later identified a need to conduct contingency planning for increased transmission rates and transport of personnel as Soldiers began to move between bases.

The TF allocated separate battalions to specific teams to address each of these capability gaps to maintain unity of command (see Figure 2). These roles became associated to lines of effort that helped leadership visualize activities and define sequential decision points associated with the activities of each team. The epidemiological picture of COVID spread on the installation as measured by the curve depicting COVID incidence drove progress through the decision points across each of these lines of effort (see Figure 3). The remainder of this article will outline in greater detail the considerations relevant to each subordinate unit within TF Contain as organized by warfighting function.

Mission Command

TF Contain immediately established a current operations (CUOPS) cell to manage the various teams executing missions. This cell included liaison officers (LNOs) from subordinate units to quickly pass information about a new problem set and associated tasks. Regular communication with the installation CUOPS and these subordinate unit LNOs ensured synchronization across all elements in support of the installation COVID response.

To protect the force, the brigade mobilized quickly but also maximized telework to protect its own capabilities and build depth. This required early identification of personnel whose roles, responsibilities, equipment, and health made them ideal candidates for telework. It also required hasty implementation of a robust communications infrastructure. Hardware requirements included laptops with virtual private network capability and also equipment to facilitate video and audio projection. Software solutions for teleworking included the Defense Information Systems Agency Global Video Services for conferences and sharepoint for collaborative work on products. Early publication of communication cards and battle rhythms proved equally important to maintaining accountability and productivity during remote working.

Intelligence

Intelligence activities through the S2 largely focused on summary of open source COVID surveillance and projection tools. The foundation of this disease surveillance was the Johns Hopkins Coronavirus Resource Center (available at https://coronavirus.jhu.edu/map.html). This data further enabled model-based projections of disease trajectory to inform planning for disease mitigation efforts. Challenges related to these modelling efforts included limitations in existing data to populate model assumptions about disease spread and the existence of dozens of products with different model structures and assumptions invariably leading to broad variance in infection incidence estimates. CDC sources presenting data from multiple models simultaneously allowed the TF Contain staff to best present projections while accounting for the uncertainty in those projections to commanders (https://www.cdc.gov/coronavirus/2019-ncov/covid-data/forecasting-us.html).

Fires

TF Contain conceptualized of the fires warfighting function as it applied to the COVID response as the implementation of collective and coordinated disease mitigation actions. TF Contain followed a process analogous to targeting to select and prioritize these actions via data gathered primarily by Team Trace. This process ensured optimal allocation of manpower and resources to achieve the greatest impact in containing the spread of the virus.

Team Trace

Team Trace provided the data collection mechanism to guide these actions. Initially, MEDDAC public health authorities performed all trace interviews and focused on COVID-positive patients only. Due to extensive delays in turn-around time for testing early in the pandemic, the installation senior mission commander ordered trace

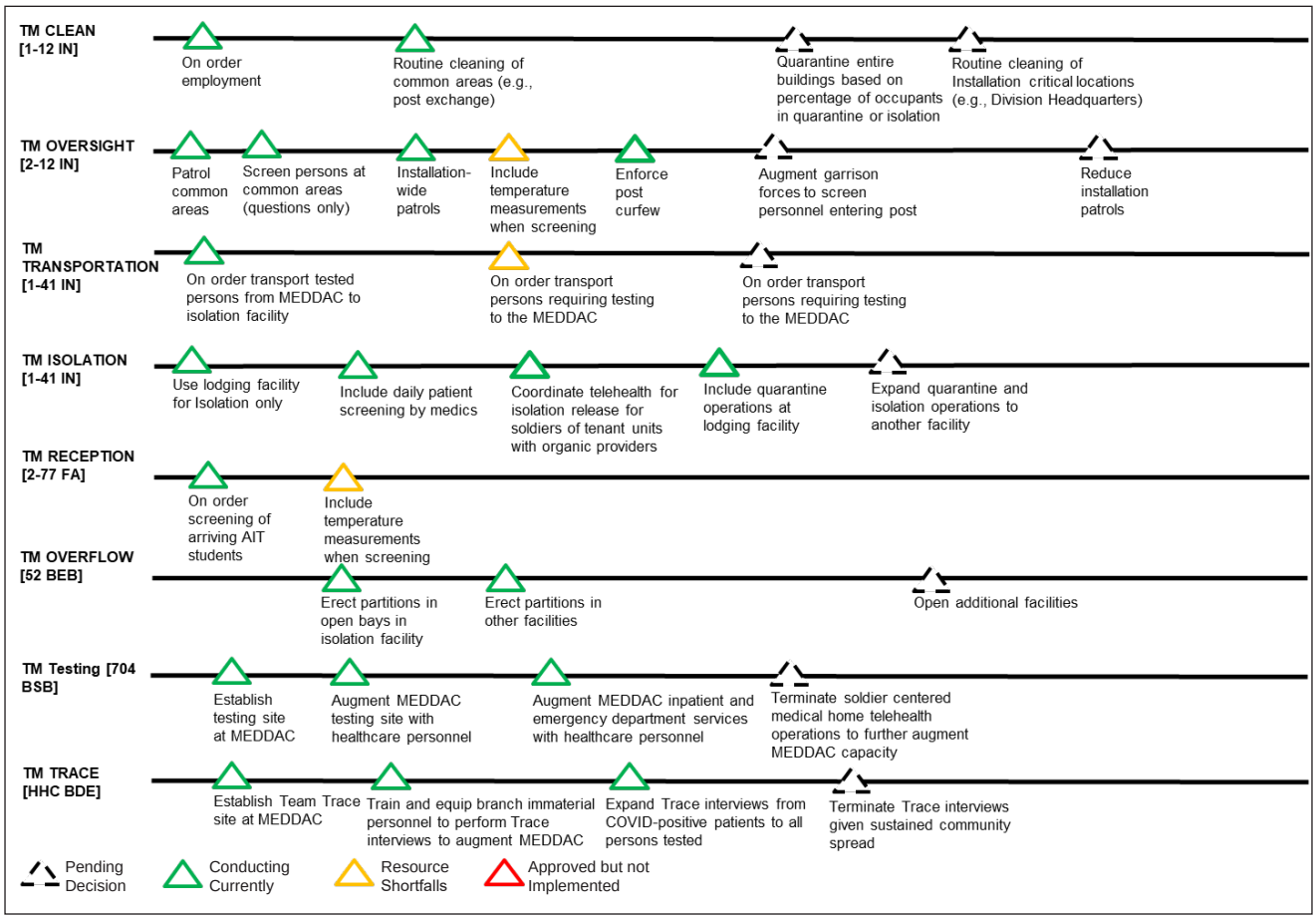


Figure 3 – Task Force Contain Lines of Effort

interviews for all patients at the time of testing. As this outstripped the capacity of public health nursing to perform these interviews, TF Contain augmented their capability with additional personnel. Team composition required a sufficient number of personnel to sustain 24-hour operations at the MEDDAC to track personnel tested for COVID, perform trace interviews, and disseminate notifications. These personnel were branch immaterial Soldiers given a deliberate effort to preserve medical combat power. These persons received formal training via approximately four hours of didactics led by public health nursing staff. They also completed online Health Insurance Portability and Accountability Act (HIPAA) training on Joint Knowledge Online. The Team Trace officer in charge performed validation before each member began shift work without direct supervision to ensure understanding and compliance with the team's standard operating procedures.

Team Trace members required a number of MEDDAC resources to include badges, access to the Defense Health Agency (DHA) network, and DHA computers. Placing Team Trace members physically inside of the MEDDAC proved helpful for ensuring robust lines of communication between all sources of patient COVID testing to track all patients tested. These sources included the outpatient Centralized Screening and Testing Center stood up by MEDDAC, the emergency department, and inpatient services. Direct interface between the TF Contain and MEDDAC commanders was instrumental in ensuring the seamless integration necessary to meet all of these requirements. Early engagement of Forces Command (FORSCOM) providers was similarly constructive as these individuals served as links between FORSCOM and MEDDAC personnel and infrastructure.

Team Trace interview procedures included multiple interview and notification actions. Upon initial testing of patients for COVID, patients became persons under investigation (PUIs). Team Trace utilized an interview tool based upon CDC interview guidance and endorsed by MEDDAC public health to solicit all close contacts with the patient during the 48-hour period preceding first symptom onset or time of testing for asymptomatic patients. Team Trace then submitted notifications to the battalion chain of command for any ADSMs requiring duty status restrictions on the basis of these trace interviews. The report names utilized orange to indicate the need for quarantine, red to indicate the need for isolation without a confirmed positive test, and black to indicate a COVID positive result:

- Orange 1: Non-ADSM who is a close contact with an ADSM has undergone testing. Notifies chain of command that ADSM requires quarantine.
- Orange 2: Trace interview complete for non-ADSM identified by Orange 1.
- Red 1: ADSM has undergone testing. Notifies chain of command that ADSM requires isolation.

• Red 2: Trace interview complete for ADSM identified by Red 1.

• Black 1: ADSM has tested positive for COVID.

Upon receipt of these notifications, Team Trace reports encouraged units to perform their own trace interviews to supplement the team's interviews. Upon the result of a positive COVID test, MEDDAC public health would perform the trace interviews. Each of these interviews fed into a single database managed by Team Trace. In this manner, the interviews built off one another, ensuring greater accuracy of information by compelling the patient to repeatedly recall the information regarding recent locations visited, activities, and close contacts.

Comprehensive capture and notifications of these duty status restrictions required that Team Trace be able to interview non-ADSMs. This required careful coordination with the installation Staff Judge Advocate (SJA) to ensure compliance with all legal requirements. Ultimately, these authorities determined that by virtue of the declaration of a public health emergency by the installation senior mission commander, Team Trace could conduct these interviews provided that all interviews were voluntary and that Team Trace disclosed no personally identifiable information for persons other than Soldiers assigned to each chain of command. The installation SJA coordinated with the Department of Public Works and MEDDAC to post informational signs disclosing the use of trace interview data in this manner to protect the force and the public health to keep patients accessing installation healthcare fully informed: "By entering this area, all individuals consent to any action taken pursuant to the commanding general's authority under DoD Instruction 6200.03. This includes, but is not limited to, medical screening/testing and contact tracing. All collected personal information will be disclosed only as necessary to safeguard public health and safety."

A division operations research and systems analyst built the database used to store all of this information in Microsoft Access. Following data entry, it was possible to use the database to perform link analysis to identify individuals at high risk of COVID exposure or spread. This analysis provided Team Trace with information necessary to identify locations associated with high footfall of PUIs and COVID positive persons for Team Oversight and Team Clean action.

Movement and Maneuver

Team Transportation

Team Transportation provided movement for Soldiers without vehicles requiring transportation related to the COVID response. This included transportation of Soldiers from lodging on post to the MEDDAC for screening and possible testing. Transportation missions also included transporting Soldiers tested at the MEDDAC to the installation isolation facility as necessary to offload the MEDDAC ambulances. Planning for these missions required accounting for the six or more feet of separation between Soldiers in each transportation platform and personal protective equipment for drivers and medics to minimize disease spread. Transportation vehicles primarily used were busses and vans procured from the installation Army field support battalion. Tactical vehicles served as a contingency option.

Team Clean

Team Clean performed disinfection operations throughout the installation. They postured to act on orders to perform clean missions during the entirety of the COVID response. Areas for clean missions derived from requests throughout the installation and analysis of areas on the installation experiencing high footfall traffic of individuals becoming persons under investigation. This posture required the creation of four separate teams each comprising eight branch immaterial Soldiers. Of these teams, one was always on two-hour recall while the remainder were on 24-hour recall.

Regarding equipment, all Team Clean Soldiers utilized personal protective equipment (PPE) to include at a minimum procedure masks and gloves. Careful measurement and monitoring of PPE burn rates was imperative to guide procedures to ensure the sustainability of the enterprise. For example, single teams performed multiple missions throughout a day re-using the same PPE in lieu of activating multiple teams when possible. Shortages of many cleaning supplies during the pandemic occasionally required novel solutions. The Army field support battalion on post stockpiled swimming pool bleach which ensured a robust supply of cleaning solution during the COVID response.

In collaboration with the installation preventive medicine detachment, Team Clean also provided training to other units on installation regarding cleaning procedures. This simultaneously ensured both standardization and quality control. To make this training more readily accessible to the installation at large, Team Clean recorded and published multiple open access education videos regarding best practices for cleaning procedures.

Team Oversight

Team Oversight members performed screening operations outside of the MEDDAC footprint to expand the reach of screening capability and prevent the spread of COVID. The order of priority for these screening efforts was first employees of facilities with high foot traffic (e.g., Post Exchange, Commissary) followed by random screenings of persons entering these facilities. These screenings included questionnaires soliciting symptoms or any history of contact with PUIs or travel to high-risk locations. Screening also included temperature measurements.

The other major component of Team Oversight activity was courtesy patrols throughout the installation. These patrols encouraged personnel to follow protective measures (e.g., wearing face masks, maintaining six feet of distance at all times). Team Trace data again informed the locations prioritized for these activities. Collaboration with installation military police was important as these teams lacked legal authority to enforce individual compliance with specific actions.

Photo by SSG Inez Hammon

Soldiers assigned to the 2nd Battalion, 12th Infantry Regiment, 2nd Infantry Brigade Combat Team, 4th Infantry Division, screen patrons for COVID-19 symptoms upon entry into the Main Post Exchange on Fort Carson, CO, on 10 April 2020.

Team Isolation

Team Isolation comprised a headquarters company to provide both medical and command and control assets in support of isolation operations. They established a tactical operations center out of the facility designated for receipt of Soldiers requiring restriction of movement that could not otherwise be accomplished at other locations on post. This population included Soldiers requiring isolation who reside in the barracks (so meaning other Soldiers in close proximity were at risk for exposure) and Soldiers with household members at high risk for adverse outcomes from COVID (e.g., household members with lung disease). This facility provided lodging for quarantine Soldiers only as a last resort to preserve bed space.

Team Isolation personnel activities included twice daily evaluations and temperature checks of all patients in isolation by medics. In the event that patients required medical care, they facilitated telemedicine visits with TF Contain providers. Team Isolation personnel ensured all patients in the isolation facility received meals three times per day and further attended to any other administrative requirements as necessary (e.g., interfacing with patient chain of command). Once isolated patients met medical criteria for release, TF Contain medics and providers would perform the requisite final evaluations and notifications of the Soldiers' command teams.

Protection

Team Screen

TF Contain providers augmented the installation MEDDAC to provide additional manpower in support of screening and, if clinically indicated, testing ADSM and Tricare beneficiaries. In a joint effort, the installation MEDDAC and TF Contain consolidated all outpatient screening and testing in a single center located at the MEDDAC, the Centralized Screening and Testing Center. The TF Contain brigade support medical company further augmented this facility with medics, and low density medical specialties (e.g., laboratory specialists). These personnel also ensured completion of all requisite requirements in particular for ADSM tested prior to departure to include issuing the pertinent general order notifications of quarantine or isolation, discharge instruction, chain of command notification, and coordination with Team Transportation (as necessary) to move to the installation isolation facility.

Sustainment

Sustainment required early definition and dissemination of a standardized reporting format for PPE, cleaning supplies, and other medical equipment. Careful coordination between S8 and S4 personnel was paramount given the need to use distinct funding codes to distinguish funding related to the COVID response. Supply support activities remained active during the response but had to adhere to strict social distancing guidelines. These organizations implemented pick-up and turn-in time slots with fire breaks to avoid overlap between customers to minimize the risk of disease spread. Dining facilities closed early but continued to provide sustainment through grab-and-go meals.

Medical care largely transitioned to telehealth encounters based out of the Soldier Centered Medical Home. Regarding physicals and behavioral health evaluations, providers

Photo by SGT Gabrielle Weaver

A Soldier with the 1st Battalion, 41st Infantry Regiment, 2nd Infantry Brigade Combat Team, 4th Infantry Division, delivers food to an isolated Soldier on 6 May 2020.

prioritized separation actions over schools. For lifecycle medical activities documented in the Medical Protection System (MEDPROS), TF Contain medical teams focused on periodic health assessments (PHAs). Hearing ultimately became viable using internal assets with strict adherence to social distancing. Other activities requiring the Soldier Readiness Center were more difficult to achieve, leading to some degradation in these readiness statistics. Dental readiness, in particular, proved a significant challenge given the risk of aerosolizing the virus.

Personnel tracking benefited from the establishment of a COVID personnel status report. This document specified all restriction of duty statuses related to the pandemic to include start and projected end dates. Hence, this product allowed not only cross-sectional measurements of readiness but also projections of the restoration of combat power.

Team Overflow

This team, composed of the brigade engineer battalion leadership team, was tasked with identifying and preparing additional isolation and quarantine spaces across the post. This team conducted a review of buildings across the post that could be options for the senior commander to use for as needed bed spaces. These spaces were available for a variety of uses ranging from housing personnel who arrived during the DoD stop move order who were unable to find other accommodations, quarantining units prior to and after deployment, and providing additional options for treatment of patients had the need risen. Subordinate companies turned bay spaces into small rooms using plastic sheeting and wood partitions.

Team Reception

Team Reception coordinated with S1 and G1 personnel and training posts nationwide to identify the dates, times, and locations for departure and arrival for Soldiers inbound to the installation. They then coordinated with the installation reception company to receive these Soldiers upon their initial arrival to the installation to screen for COVID risk factors and symptoms. For Soldiers failing this initial screening, they provided transportation to the MEDDAC for further evaluation. For Soldiers not failing initial screening, Team Reception provided transportation to the Soldiers' receiving units who subsequently assumed responsibility for all further actions for these them, to include quarantine as indicated. In the event that receiving units lacked adequate bed space for arriving Soldiers, Team Reception transported those Soldiers to pre-designated facilities run by TF Contain for lodging, quarantine, or isolation as indicated.

Rapid Decision-Making Process

Through the course of the TF Contain mission, the brigade staff held regular decision-working groups with all subordinate units. During these groups, units and personnel associated with the mission nominated problem sets which were discussed with the larger audience, and a decision was either recommended at the moment or transitioned to a breakout group with specific stakeholders. This process saved immense amounts of time across the staff in both getting to decisions quickly and allowing personnel to work where they were needed most. Because TF Contain was supporting the broader Fort Carson community, the brigade arranged a standard decision board time with the senior installation leadership to gain feedback and decisions on issues that were being identified by TF Contain but affecting the broader Fort Carson community.

Division Support

Because of the significance of this mission for the post, the 4th Infantry Division G3 established a planning cell at the division level that was led by a senior lieutenant colonel. This planner worked closely with the TF Contain staff and was instrumental in providing information, additional staff support, and other resources to TF Contain.

Conclusions

The experiences of TF Contain offer future brigade combat teams in general and infantry units in particular a conceptual framework for the operationalization of a comprehensive public health response to an infectious disease. Ongoing worldwide population growth and globalization make it increasingly likely that U.S. Army formations will have to contend with similar infectious disease threats in the future. Few of the personnel assigned to this organization had pre-existing experience or training related to infectious disease prevention or epidemiology. Nevertheless, this organization demonstrates the capacity of the military decision-making and operations processes to build robust procedures in response to unconventional threats.

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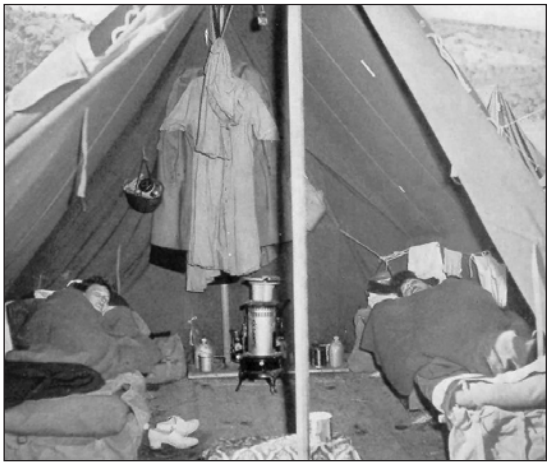
MAJ Daniel P. Brady currently serves as the Joint Staff coordinator for U.S. Forces Japan at Yokota Air Base, Japan. MAJ Brady has served in light and mechanized units. He previously served as the brigade executive officer for the 2nd Brigade Combat Team, 4th Infantry Division at Fort Carson. His is a graduate of Air Assault, Airborne, Pathfinder, Sapper Leader, and Joint Engineer Operations courses in addition to the Maritime Advanced Warfighting School. MAJ Brady earned a bachelor's degree in human geography from USMA; a master's degree in engineering management from the University of Missouri, Science and Technology; and a master's degree in defense and strategic studies from the Naval War College.

Committing to Gender Integration:
Get Rid of the Female Tent

CPT ASHLEY BARBER

Over the past decade, the U.S. Army has taken steps to fully integrate women into all positions in its formations. In June 2020, the Army announced female infantry and armor Soldiers will integrate into the last nine brigade combat teams by the end of the year.[1] In light of these initiatives and the open-mindedness of my leadership, I competed for and served as a light infantry brigade assistant S2 and, more importantly, an infantry battalion S2, a position open to women since 2014.



Gender integration has had its challenges, but in my experience, leaders at all levels are trying to embrace this evolution. It is not unusual for a group of officers to experience awkward initial counseling sessions with the maneuver commander wherein the commander overemphasizes their support of female integration directly to the one female officer in the room. Although it may seem uncomfortable for all parties involved, these maneuver officers are still learning, and while it may not be perfect, at least they're trying.

However, even with the best of intentions, military leaders occasionally make decisions that inadvertently segregate women, leading to the unintended consequence of isolating them from their units. This article addresses how a commander's simple decision on troop billeting can have an adverse impact, and how commanders and leaders can more successfully lead gender-integrated teams.

The Female Tent: A Flawed Good Intention

When a unit deploys to a Combat Training Center (CTC), Soldiers are housed in "tent city" while conducting reception, staging, onward movement, and integration (RSOI), leaders are responsible for allocating tents, ensuring they account for all personnel on the ground. Sometimes as an afterthought, someone asks the question: "Where is the female tent?"

The idea that women require their own tent is an antiquated tradition that many senior leaders (and often junior leaders) have yet to break from and likely causes more harm than good. This issue may initially seem benign within the context of integrating women into combat arms units. After all, it's "just" a tent, it is only temporary, and you only go there to sleep and then show up to the next formation. This issue is about much more than a tent. The decisions leaders make can help or hinder their ability to build a cohesive team that sees beyond gender.

The female tent exists mainly as a safety precaution to protect the female Soldier population. Sexual assault and harassment continue to be large issues in the military. However, as we look deeper into the effects of gender-segregated tents, we will start to identify how our separate treatment of genders only exacerbates the issue. Studies in the past decade, including one conducted on the Norwegian Army's unisex living spaces in 2014, concluded that integrating genders for training and in living quarters increased team cohesion between genders by breaking the "us versus them" mentality, decreased sexual harassment and assault claims, and made gender difference less significant.[2] Instead of training separate teams of male and female Soldiers, the integrated training and living arrangements created teams of Soldiers comprised of men and women.

The segregation of women from their platoon, company, or battalion leads to them missing critical events, and team building and bonding built during times of uncertainty when leaders make decisions and plans change. The female tent creates an additional barrier to communication where a portion of the unit does not receive updates on the evolving operational conditions because men and women are hesitant to enter each other's tent to get information. Women show up to meetings being caught off guard by changes in the plan that were made among the male officers at 2300 but failed to make it back to the female battalion staff lead because they forgot, they figured it could wait, or it was too inconvenient to send a runner to inform them of the change. This communication barrier creates an overall disadvantage to the commander, who now has a population in the formation that is unable to inform the decision-making process, and in the end hinders the unit in achieving mission success.

More importantly, the female tent denies female Soldiers equal access to the esprit de corps and cohesiveness-building reality of shared accommodation, and often imposes a gender divide on teams. In the end, this causes women to miss the stories told in their team, invitations to the gym, and group meals. They miss the inside jokes and become

an outsider in their own unit. They struggle to get to know their unit, and their unit struggles to bring them into the fold. It becomes a self-perpetuating cycle of damaging isolation that most women do not want but are forced to endure.

How Do We Fight the Female Tent?

Prioritize mission success over comfort. Key to mission success is enabling your commander's ability to exercise command and control over the formation. The female tent takes women of different ranks across the formation and puts them in one tent geographically separated from their organic teams. We, in turn, hindered multiple leaders' ability to lead effectively by complicating the flow of communication, reducing the ability to receive feedback from a select population, and decreasing the flexibility of a unit to rapidly adapt and execute operations. The female tent becomes more unfeasible as we integrate more women into company commander, executive officer, and platoon leader positions in combat arms formations.

As leaders in charge of planning training events, we need to focus on how to enable mission success. In 2018, my light infantry brigade had one battalion commander, one command sergeant major, two brigade staff primaries, five brigade staff senior NCOs, at least one battalion staff primary officer or NCO per battalion, and five company commanders or first sergeants who were women. That equaled 20 leaders at the company level and above who were integral to the brigade's success at our CTC rotation. Since then, the number of female leaders in today's brigade combat teams continues to increase.

Focusing on mission success means all leaders are able to be with their Soldiers through all aspects of a training environment. Integrated tents allow leaders to better take care of their Soldiers because they are together in one place where they can monitor the well-being of each Soldier as the unit goes through stressful training exercises. It allows leaders to identify and address sexism issues in their ranks because they can monitor the interactions among all of their Soldiers. In a segregated environment, leaders may not be present when their female Soldiers are harassed while they are isolated in separate areas. Integrated tents build better teams that communicate more effectively, provide feedback to their commanders, and react quicker to rapid changes because they are a cohesive unit that treats everyone as a valued member of the team.

Use informal leadership. As described in Army Doctrine Publication (ADP) 6-22 *Army Leadership,* part of informal leadership is taking the initiative to advise formal leaders on decisions based on previous experience or expertise. Informal leadership takes initiative and some courage because it usually involves an individual speaking up to leaders who outrank them. In one experience at a CTC exercise, my company leadership was trying to remove the female Soldiers from our unit's tent because the brigade's designated female tent did not have enough females in it. A female lieutenant I supervised looked at me with disappointment and asked me if there was anything I could do to stop it. I decided to work with another female captain located in our company to make it clear to our leadership that we did not want to leave our sections to live in a separate tent. The company leadership relented but not without some offhand remarks about how we were an inconvenience.

Integrated tents build better teams that communicate more effectively, provide feedback to their commanders, and react quicker to rapid changes because they are a cohesive unit that treats everyone as a valued member of the team.

After that experience, the female officers made it a point to teach our staff sections how the separation of women into female tents affects women because our male peers honestly did not understand. How could they? In their military career, they never had to be separated from their team because of their gender. The effort we made to stay in the tent was worth it because our section became a more cohesive team, and it was a leadership opportunity that enabled us to discuss a gender issue with our male counterparts that they will never experience firsthand. Informal leadership is a powerful tool that leaders can use to prevent segregation in their units, regardless of gender.

Be comfortable asking "What's best for the team?" You may not know all the right answers when it comes to how best to integrate women and that's okay. It is a learning process for everyone. What Soldiers do not want to hear is what one of my peers told me as he shrugged his shoulders, "We forgot to account for you guys (for bed space). Sorry, I'm infantry." Instead, leaders should exercise humility and ask their female peers or subordinates for input. More often than not, they have been through these situations multiple times, and they will appreciate your willingness to learn about how best you can assist your formation. It is as simple as something an infantry major once said to me: "I'm new to this. Do I need to make special accommodations for you, or do you feel comfortable staying with the unit?" Yes, it can feel awkward to ask, but there is a certain amount of respect you gain when you open yourself up to learning how best to ensure everyone feels like a valued member of the team.

If a living situation is poorly planned or seems like it may be an issue, present the options: "We can let you stay in the open bay with the males and everyone will just use their sleeping bags or the latrines to change, or we can cordon off an area in the bay for privacy so that we can keep you with the team."

Keep everyone in the loop. Sometimes it is inevitable to be forced to split your unit into gender-specific tents, especially while traveling through different locations with transient barracks or if the final decision is made above your level. When this happens, it is important to take steps prior to the unit splitting apart to make sure that the isolated

personnel stay in the loop. Leaders should develop a clear communication plan and battle rhythm to distribute information. It is imperative to ensure inclusiveness of the isolated population for both work- and social-related events. If a squad goes to eat together, it is the responsibility of that squad and team leader to include the female squad members. If a platoon is tasked for a working party, the platoon sergeant needs to get everyone involved in helping. If the battalion staff needs to talk through some minor decisions, make the effort to get those female staff officers involved. It can be demoralizing to hear the stories of what someone missed because no one bothered to let her know what the unit was doing.

It's a Learning Process

Gender integration will continue to be a learning process for the military. To build better integrated teams, units need to train, eat, and sleep in harsh environments together. As leaders, we are responsible for making decisions that enable mission success, providing feedback on gender integration, and remaining open to new ways to improve integration. No part of ADP 6-0, *Mission Command*, and ADP 6-22 suggests that any type of segregation is good for the Army. Segregation of any type creates resentment, isolation, and ultimately an unsafe environment for everyone. Instead, leaders need to focus on building cohesive teams based on mutual trust, and unit integrity through shared hardship is essential to that cohesion. We should be able to reach solutions that allow all Soldiers, regardless of gender, to feel like an equal member of the team and trust that they can depend on each other for anything.

Notes

[1] Kyle Rempfer, "Army Adjusts 'Leader First' Policy, Plans to Integrate Women into Last 9 Brigade Combat Teams this Year," *Army Times*, 8 June 2020, https://www.armytimes.com/news/your-army/2020/06/08/army-adjusts-leader-first-policy-plans-to-integrate-women-into-last-9-brigade-combat-teams-this-year/.

[2] Ida Irene Bergstrøm, "Unisex Rooms Made Gender Insignificant in the Army," 14 March 2014, http://kjonnsforskning.no/en/2015/09/unisex-rooms-made-gender-insignificant-army.

Editor's Note: *This article first appeared online on the From the Green Notebook website (https://fromthegreennotebook.com/2020/07/23/committing-to-gender-integration-get-rid-of-the-female-tent).*

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Advising Lethality:
What the SFAB Brings to the Fight

LTC JAMES TEMPLIN

"It's clear that the faint clouds of a coming storm are on the horizon. It's our duty to be ready today, more lethal tomorrow."[1]

— GEN Mark Milley
Chairman of the Joint Chiefs of Staff

Lethal units that rapidly adapt to the operational environment and integrate capabilities to achieve overmatch are essential to winning large-scale combat operations (LSCO). In this fight, leadership, experience, and unit proficiency are the most valuable attributes. Realistic training requires seasoned leaders to provide purpose, direction, and motivation. Security force assistance brigades (SFABs) are a newly employable capability that can enhance realistic training by providing additional leadership and experience to help develop proficient, adaptable, and lethal Soldiers and units. Moreover, the SFABs apply their skillsets by, with, and through their partner force, which is essential to their success, both in combat and in training. This is a two-fold gain: As the SFAB teams advise lethality in training, they further develop advisor core competencies, preparing themselves for deployment. The 3rd SFAB tested the advisor-enabled training model in preparation for its deployment to Afghanistan in support of Operation Freedom's Sentinel (OFS). The concept of advisor-enabled training between SFABs should be habitually leveraged and improved upon in the future. This article will identify how and why the advisor-enabled training model is important for future readiness, with particular focus on the SFAB infantry battalions and what they bring to the fight.

In late May 2019, during unit training leading up to a deployment in support of OFS, Bowie Company, 1st Battalion, 3rd SFAB, supported the training and certification of 1st Battalion, 128th Infantry Regiment, Wisconsin Army National Guard (WIARNG). The 1-128 IN WIARNG was preparing to deploy as the 7th Battalion Guardian Angel (GA) force for 3rd SFAB. The 3rd SFAB leveraged the opportunity to both practice advisor skillsets and enhance the realistic training and lethality for 7th Battalion. What both formations found was mutual value in leveraging the experience, embedded capabilities, and human-centric approach of the SFAB in developing unit readiness and lethality. To understand why this experience was so valuable, it is essential to understand what the SFAB does, what it is composed of, and how the SFAB accomplishes its mission.

What is an SFAB?

"The U.S. Army SFAB is the Army's dedicated conventional organization for conducting SFA (security force assistance) around the world. While each SFAB has a regional focus, its unique capabilities enable it to perform wherever it is needed with minimal cultural and regional orientation."[2]

The SFAB is a force dedicated to improving partner capability and capacity by leveraging unique skillsets and attributes to assess, train, advise, and assist foreign security forces (FSF) in coordination with joint, interagency, and multinational forces.[3] SFABs are uniquely manned with capabilities across warfighting functions (WfFs) and trained to develop FSF to synchronize capabilities and mass the effects of combat power, both direct and indirect, to achieve overmatch.[4] The Army designed SFABs to understand the operational environment, coordinate across WfFs, develop intelligence-operations fusion, and improve enabler integration. The SFAB accomplishes these tasks by, with, and through our partner force to ensure solutions are organically sustainable and FSF formations are institutionally viable.

The SFAB employs advising teams as the primary means to develop FSF lethality, survivability, and institutional viability. In the SFAB maneuver battalions, the company advisory teams (CATs) and subordinate advisory teams (ATs) are rapidly deployable 12-person elements with a core of five operational advisors, augmented with five support advisors, and an experienced officer and NCO lead the teams (see Figure 1).[5] Advisors are selected, specially trained, and further developed through unit training and access to relevant schools like SERE (survival, evasion, resistance, and escape), Joint Fires Observer (JFO), and Battle Staff

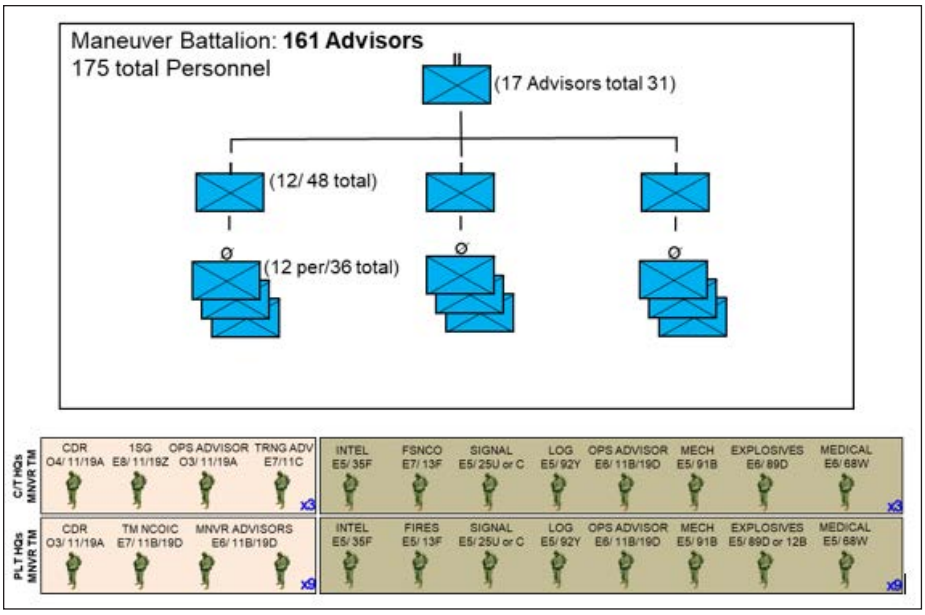


Figure 1 — Task Organization of SFAB Maneuver Battalion, Company, and Advisory Teams

courses. The Army designed the SFAB advising teams to operate at echelon and up to two levels higher. This means the CAT executes brigade-level advising and the AT executes battalion-level advising.[6] The SFAB tailors its advising efforts to the operational environment and the capabilities of the partner force. For example, during a recent deployment to Afghanistan, Bowie Company advised the Afghan National Army (ANA) at the corps and brigade levels. In contrast, Bowie Company advised at the battalion and company levels when advising U.S. forces during pre-deployment training. Regardless of the operational environment, the SFAB operates by, with, and through its partner force, with particular regard to the human aspects of military operations.

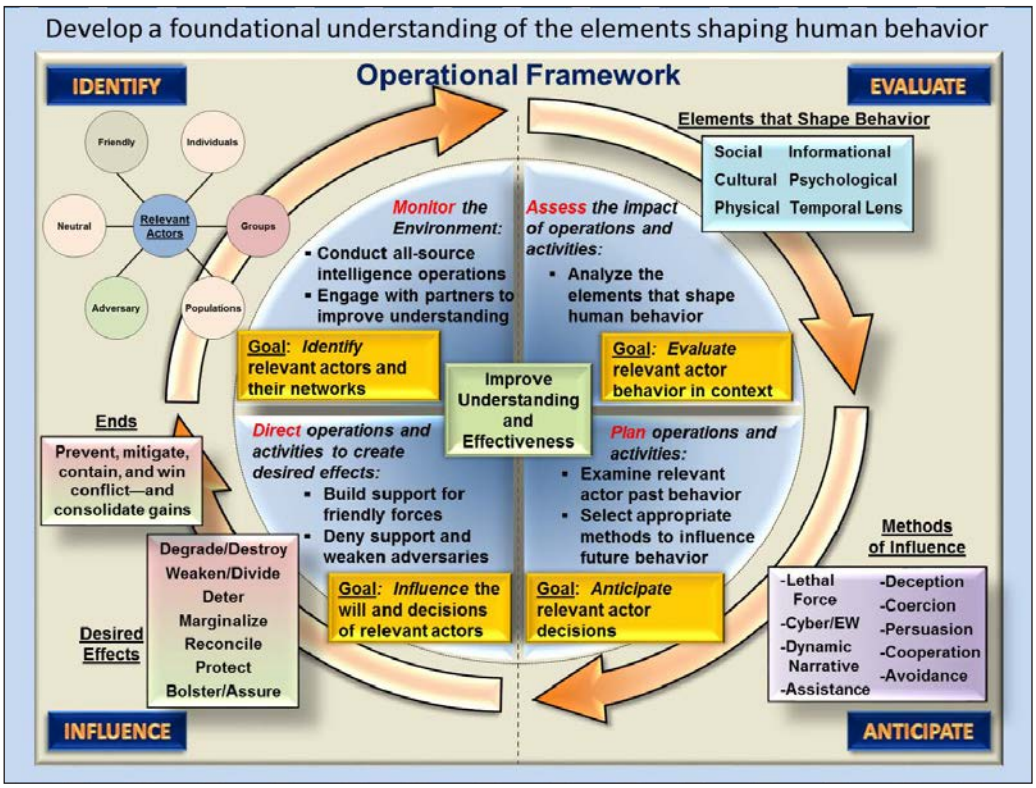
The Joint Concept for Human Aspects of Military Operations (JC-HAMO) provides a foundational understanding of how SFABs approach their mission (see Figure 2).[7] SFAB advisors consistently seek to understand the human dimension, identify key and relevant actors, evaluate their behavior, anticipate their perspective, and influence their decisions. This is all in an effort to work themselves out of a job and advance to the next level by developing their partner forces' capability and will to become more lethal, survivable, and institutionally viable. SFABs implementation of the "by, with, and through" model is both a science and an art. Advisors spend significant time assessing their partner force, evaluating where to apply advisory capacity, deciding how to influence change, and identifying clear measures of performance and effectiveness. This is the science of advising. As advisors make contact with a partner force, they leverage their training and attributes to influence perspectives and decisions. This is the art of advising. The SFAB's distinct, human-centric approach also achieves a significantly improved outcome when employed to support U.S. forces' training progressions.

What Can SFABs Bring to the Fight?

"The complexity of the SFAB planning for training is similar to the planning conducted by the combat training centers or training support brigades. The FSF and SFAB commander's visualizations and end states are refined into goals and objectives by commanders, staffs, and their FSF counterparts. These goals and objectives are then translated into training objectives."[8]

The SFABs are different from anything Forces Command (FORSCOM) has fielded in the past. Their unique

Figure 2 — Operational Framework for the Joint Concept for Human Aspects of Military Operations[9]



Photos courtesy of author

Advisors from the 3rd SFAB use Android Tactical Assault Kits to advise targeting concepts with 1-128 IN Mortars Section.

requirement as combat advisors is to embed with a partner force, earn their trust, understand the situation from their perspective, and develop solutions together. The SFAB mirrors this approach when training with U.S. Army units, producing uniquely beneficial results. We work by, with, and through our partners — we are not outsiders, so we bring an organic understanding of the situation to leaders at echelon. This is extraordinarily valuable as it provides a multifaceted perspective of what is happening, which in turn helps leaders and commanders address challenges they may not otherwise see. Furthermore, because SFABs bring experience and maturity to the fight, we have an increased ability to influence people; reinforce human networks; leverage advanced tactics, techniques, and procedures (TTPs); and integrate efficient systems and processes. When applied to training with U.S. formations, the integration of SFAB advisors makes training more focused, progressively more challenging, and more tailorable to the individual needs of a unit.

In preparation to support 1-128 IN WIARNG, Bowie Company spent a week conducting focused mission planning, working with 1-128 IN leadership and staff to understand their training requirements and develop a tailored advisory plan. The company distributed tasks by both training requirements and staff functions to support those requirements. Throughout the planning phase, SFAB advisors paid particular attention to developing a battle rhythm around assessing key and relevant actors, identifying training needs, and influencing our 1-128 IN partners to see problems for themselves and trust advisors to assist them in problem solving. The advisors focused on identifying how we were going to help leaders lead and subordinates execute their tasks more effectively. The company developed a baseline of individual assessments (aka "baseball cards") and human network diagrams, which helped the advisors understand the partner force (1-128 IN) and how the Soldiers interacted with each other. In other words, the SFAB paid significant attention to how advisors were going to influence people to see problems and act together to address them. During this time, the company also developed internal training objectives and established a line of effort to meet those objectives.

> "We were able to maximize resources and focus on areas of improvement. SFAB bridges the gap of evaluating collective tasks to beneficial holistic assessments, at echelon. Each partnered advisor, while having the experience and the ability to generate meaningful dialogue with NCOs and officers alike, was able to identify and tailor actionable solutions to increase our lethality. Their dedication and commitment to our force created a synergetic partnership based on a strong foundation to grow and develop leaders."
>
> **— LTC Aaron Freund**
> Commander, 1-128 IN WIARNG

Bowie Company embedded with members of 1-128 IN, distributing personnel across the formation to observe from a variety of perspectives and develop solutions at echelon. Company leadership embedded with the battalion command team and staff. Advisory team leaders worked with company and platoon leadership, and team members embedded with the platoons and squads. Advisors supported individual skills training to include small-arms marksmanship, medical training, driver's training, troop leading procedures, mortar ranges, and call-for-fire/close air support ranges. Advisors also supported a battalion staff exercise, squad live-fire exercise, and platoon situational training exercise. The advisor teams reinforced the importance of progressively more challenging training that integrated aspects of prior training. We assisted the battalion staff, company, and platoon leaders by helping them plan, lead, and self-assess with well-developed after action reviews (AARs). The advisor teams provided daily assessments of leaders, teamwork, training progression, and training gaps. The combined training enabled the advisors to integrate their unique tools and capabilities into training to reinforce partner force battle tracking, forward tactical operations center (TOC) operations, and enabler integration. For example, the advisor teams integrated Raven unmanned aerial vehicles (UAVs), personal locator beacons, and Android Tactical Assault Kits (ATAKs) into various training exercises from expeditionary TOCs to provide multiple perspectives of training. The combination of experienced NCOs and officers applying their capabilities and tools significantly improved battalion and company leaders' ability to see their training for themselves, understand their teams more personally, focus effort on specific challenges, and know they had advisor horsepower to assist with overcoming any challenges.

> "The operational assessment reveals strengths and gaps in the foreign security forces' ability to perform their missions, roles, or functions. It shows how well the FSF can conduct their missions. A clear understanding of the FSF operational or institutional mission serves as the starting point to base the operational assessment."[10]

Throughout the support to 1-128 IN, Bowie Company provided daily feedback to key leaders, reinforced on-the-spot corrections, and helped the unit build its approach to future

training events. The advisor teams also built a detailed operational assessment of leaders, unit tactical proficiency, staff functions, training sustainment, and training gaps. This culminated in a 33-page document and a formal discussion with battalion leaders on our perspectives. The assessment was well received by 1-128 IN leadership and integrated into the planning for future training. Most importantly, members of the collective team bonded quickly and created an atmosphere of trust and comradery. This intangible aspect of what the SFAB does is the single-most important reason advisors can build lethality so rapidly — SFAB partners see advisors as members of their team. With this built trust, advisors can influence change rapidly and help partners adapt at a pace that outperforms other methodologies.

Advisors from the 3rd SFAB conduct an operations meeting with security pillars in Ghazni Province, Afghanistan, in early 2020.

The Future of Advisor-Enabled Training

The SFABs are uniquely capable and arrayed to support Army readiness and unit lethality. An early and continuous demand signal is essential to leveraging the opportunities of the advisor-enabled training model. This will allow SFAB leaders and staff to prepare to support future training, tailor their approach, build relationships, and maximize their capability to reinforce unit lethality. Operations officers and commanders from across the maneuver force in active, National Guard, and Reserve commands should look for opportunities to conduct advisor-enabled training events with SFABs. FORSCOM and Training and Doctrine Command (TRADOC) planners can work with the Security Force Assistance Command (SFAC) and the subordinate SFABs to organize the availability of various advisory packages. Additionally, there are six SFABs located at major U.S. Army installations across the United States. This collocation of SFABs and Army maneuver formations presents an opportunity for mutually beneficial training that brigade combat teams (BCTs) and brigades can leverage during their home-station training progression for LSCO.

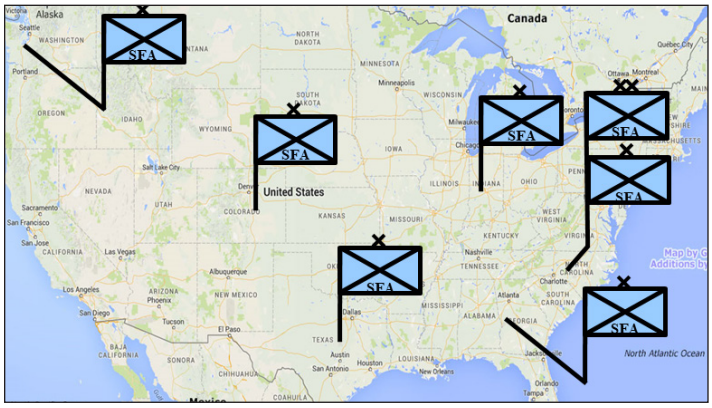


Figure 5 — SFAB Locations

The SFAB basing offers mutually beneficial training opportunities with U.S. Army BCTs and maneuver brigades. [1st SFAB: Fort Benning, GA; 2nd SFAB: Fort Bragg, NC; 3rd SFAB: Fort Hood, TX; 4th SFAB: Fort Carson, CO; 5th SFAB: Joint Base Lewis-McChord, WA; 6th SFAB (National Guard): Stout Field Armory, IN]

Over time and with individual and organizational experience gained through training repetitions and deployments, the SFABs are professionalizing their role as combat advisors. The SFAB capability to support maneuver force training and preparations for LSCO continues to increase. In the future, SFABs will bring unique experiences from worldwide deployments, which can reinforce region-specific training plans. SFABs will also turn support to U.S. maneuver elements into a natural extension of the advising mission, gaining efficiencies in processes and approach. SFABs are ready to execute advisor-enabled training events to enhance unit training, increase lethality, and prepare for LSCO; we are prepared to support at the highest standard.

Notes

[1] David Vergun, "Army Readiness, Lethality Increasing Amid Troubled World, Says Chief of Staff," Army News Service, 12 October 2018. Accessed from https://www.army.mil/article/212191/army_readiness_lethality_increasing_amid_troubled_world_says_chief_of_staff.

[2] Army Techniques Publication (ATP) 3-96.1, *Security Force Assistance Brigade*, May 2018, 1-1.

[3] Ibid, 1-14.

[4] Ibid, 1-14.

[5] Ibid, 1-20.

[6] Ibid, 1-16.

[7] Joint Chiefs of Staff, *Joint Concept for Human Aspects of Military Operations*, 19 October 2016, 14.

[8] ATP 3-96.1, 5-1.

[9] *Joint Concept for Human Aspects of Military Operations*, 14.

[10] ATP 3-96, 4-7 to 4-8.

LTC James Templin is commander of Bowie Company, 1st Battalion, 3rd Security Forces Assistance Brigade (SFAB), currently forward deployed to Logar Province, Afghanistan. He is a Special Forces officer (formerly Infantry) with 17 years of active-duty experience and five combat deployments to U.S. Central Command. A graduate of the National Defense University's Joint Special Operations Master's Program, LTC Templin is a career advisor with experience advising in Pakistan, Afghanistan, Iraq, and Central America with 3rd Special Forces Group (Airborne), Asymmetric Warfare Group (AWG), and now the 3rd SFAB.

Training for the Army's New M4 Qualification

SSG ADAM OLSZAK
2LT DAVID RICHARDS
CPT JOSEPH NYHAN
LTC CHRIS RICCI

"In battle, the only bullets that count are those that hit."
— President Theodore Roosevelt

The new Army marksmanship M4A1 carbine qualification course of fire is a more complex and realistic evaluation of lethality. The integration of barriers, unprompted reloading, and firing position transitions provide leadership with a challenging task for training Soldiers.

Company-Level Rifle Marksmanship Programs

Any company's rifle marksmanship program needs to start with the identification, training, and certification of marksmanship trainers. The Marksmanship Master Trainer Course (MMTC) at Fort Benning, GA, provides units with marksmanship trainers who understand how to train marksmanship and can assist commanders in planning and implementing a marksmanship training strategy.[1] In the 198th Infantry Brigade, which conducts Infantry One Station Unit Training (OSUT) at Fort Benning, companies have one MMTC-qualified drill sergeant per platoon. As a result, companies routinely maintain marksmanship averages from 34-36 each training cycle with 235 Infantry recruits.

In establishing an effective company-level marksmanship program, send as many NCOs as possible to the MMTC — one per platoon at the very least. Acknowledging that some units do not have the luxury of having the MMTC right down the road, battalions should find every available opportunity to send their NCOs to school; a perfect opportunity would be reserving an MMTC slot pending an NCO's graduation from either Advanced Leader Course or Senior Leader Course. Sending NCOs to MMTC still might not be an option to some units either due to training calendars or funding. Under these circumstances, divisions should look to establish their own satellite "Master Marksmanship Course." The 25th Infantry Division's Lightning Marksmanship Instructor Course and the 10th Mountain Division's Rifle Marksmanship Instructor Course are just two examples of units providing their Soldiers with a local training course nesting with the principles taught at the MMTC.

Rifle Marksmanship Progression – A Way

At Infantry OSUT, rifle marksmanship includes 19 different training periods spanning roughly three weeks. Within the first 72 hours of the trainees' arrival, we issue their weapons and conduct weapons immersion training. This block of instruction includes the four tenets of weapons safety and a foundational knowledge base of the characteristics and capabilities of the M4A1 carbine. Over the next two weeks — and prior to even getting on a live-fire range — trainees will conduct concurrent training on rifle marksmanship. All of this concurrent training is meant to ensure a trainee's success on the range, prior to them even firing live rounds. They will then progress to training in the Engagement Skills Trainer (EST) for basic grouping techniques and practice.

Live marksmanship training begins with executing a group/zero with back-up iron sights and progresses through the EST (single/multiple targets) to a location of misses and hits (LOMAH) range. At the LOMAH range, trainees confirm their zeroes at 175 and 300 meters respectively. Any units that have the opportunity to train at LOMAH ranges should absolutely do so. These ranges allow the drill sergeants (or any marksmanship trainer) to simultaneously view 16 different shooters' target groups using a handheld tablet. Similar tablets are set up at each firing position in order to give immediate feedback to shooters of where their rounds are hitting the target. From a trainer perspective, this presents a shooter with two possible coaches: a battle buddy who is monitoring the shooter with the individual results and the cadre with the 16-view tablet. The cadre member can identify lanes with shooters who are struggling and redirect a leader to provide some additional and personal coaching. Moreover, LOMAH ranges provide the opportunity for trainees' to utilize their holds at proper distances; this allows them to understand the difference between the point of aim versus the point of impact.

After executing LOMAH training and additional periods in the EST, trainees execute single/multiple target training (on a 300-meter range) and then conduct a qualification. After the qualification with back-up iron sight, the entire marksmanship process resets and restarts implementing the M68 Close Combat Optic (CCO). After executing single/multiple target training, there is room in the training glide path to train with barriers, on moving targets, and execute a number of practice qualifications. Around the fourth week of being on the range, trainees will execute their record qualification with the CCO, culminating the rifle marksmanship training period. Throughout the Infantry OSUT rifle marksmanship period, trainees will expend approximately 1,000 rounds of ammunition.

Concurrent Training

Just like any operation, concurrent training must be planned deliberately to achieve a specific desired end state. When planning for rifle marksmanship training, this end state is all trainees (or Soldiers in a given company) qualifying expert on their assigned weapon.

All concurrent training must start with and build upon the functional elements of the shot process (stability, aim, control, and movement).[2] The most basic dry-fire drills are listed and explained in Appendix D of Training Circular (TC) 3-22.9: *Rifle and Carbine*. Despite the necessity to focus on magazine changes and transitions, it is imperative that units continue to begin their progression (and enforce) with the basics of stability: body position, natural point of aim, correctly holding the rifle, and posture. After mastering the

On the previous page, a trainee in the 2nd Battalion, 54th Infantry Regiment, 198th Infantry Brigade, fires his rifle during marksmanship training at Fort Benning, GA.
Photos courtesy of authors

shot process, companies must deliberately plan concurrent training to incorporate transitioning positions, fighting up on the barrier, and executing magazine changes.[3]

Shadow boxes and transition barrels have continuously proven to be the most effective training aids. Shadow boxes are extremely portable and can be set up virtually anywhere — even and especially in the bays. Transition barrels are just standard metal drums with four ALT-C targets fixed around the outside. These, too, are relatively portable. Using the transition barrels allows Soldiers to practice their shot process, holds, and eventually become proficient with the new course of fire. The biggest challenge that most units at OSUT face is reinforcing the necessity of utilizing proper holds at a given distance. LOMAH ranges do help build repetition; however, holds can be easily emphasized using transition barrels.

A drill sergeant with the 2nd Battalion, 54th Infantry Regiment looks over a trainee's shoulder to assess target acquisition and points of impact.

Magazine changes cannot be ignored, especially with the new course of fire. Executing training of magazine changes is easy to facilitate and can be done anywhere at any time. It is important, however, to incorporate malfunctions into any and all concurrent training. Despite having a deliberate concurrent training plan augmenting a training glide path, it is important to note that some issues will arise throughout training that require involved leadership. Plan for a number of trainers to focus on "hardcore" shooters that simply do not understand the basics and allot them the proper resources and time to work with these Soldiers.

To be successful (and lethal) as a unit, it is absolutely necessary that leaders implement concurrent training and dry-fire drills daily. This makes the functional elements of the shot process a habit that can be easily replicated on the range.

Thinking through the Training Cycle

TC 3-20.0, *Integrated Weapons Training Strategy*, outlines six tables pertaining to an individual weapon training strategy.[4] These tables are divided into "Prerequisites to Live Fire" (Tables I, II, and III) and "Live-Fire Events" (Tables IV, V, and VI):

- Table I: Preliminary Marksmanship Instruction and Evaluation
- Table II: Preliminary Live Fire Simulations
- Table III: Drills
- Table IV: Basic
- Table V: Practice
- Table VI: Qualification

The TC also states that the above tables can be executed in 4.5 training days.[5] This includes conducting Table III (drills) throughout the other live-fire training events as concurrent training. Units can and should plan for much more time dedicated to weapons strategy. Ideally, units have at least two weeks to execute individual weapons training. This will allow ample time to deliberately instruct, practice, train, and execute so as to ensure all Soldiers can become as lethal as possible.

Preliminary Marksmanship Instruction and Evaluation (PMIE) cannot be ignored, even in tactical units. At Infantry OSUT, as previously described, units often take a week to conduct proper PMIE. Even though these are civilians, it is important to not just assume that every Soldier has a proper understanding of weapons safety, weapon manipulation, and the functional elements of the shot process (this last one is especially uncommon knowledge across any unit — just ask). In taking the time to teach a number of classes for PMIE, leaders also create opportunities for concurrent training based off the classes given. This way, units can build more range time for themselves by getting ahead of Table III: Drills.

The Army is constantly moving more towards the execution of virtual training due to availability, cost, and effectiveness. Preliminary live-fire simulations are an extremely effective tool because they allow trainers to identify issues early and in a low-threat environment; better to fix these issues in the EST rather than out at the range, wasting precious time and ammunition. Taking the time to conduct effective virtual training will facilitate a more efficient training event on the range, not to mention the fact that these virtual training events can (and should) be broken up and reinforced with concurrent training drills. At Infantry OSUT, units typically spend four to five days in the EST. On the line, units might execute a day of EST, then move out to the range. The recommendation is to not just "check the block" on virtual training, but plan for

Preliminary Marksmanship Instruction and Evaluation (PMIE) cannot be ignored, even in tactical units. At Infantry OSUT, as previously described, units often take a week to conduct proper PMIE. Even though these are civilians, it is important to not just assume that every Soldier has a proper understanding of weapons safety, weapon manipulation, and the functional elements of the shot process...

it to occur throughout the weapons training glide path: use the EST up front, go to the range, use the EST to fix issues, reinforce good habits, and then go back out to the range. Implementing virtual training throughout — not just up front — will actually save time, resources, and effort for every unit.

When it comes to Tables IV-V, repetition is key, especially with the new course of fire. At this point, units ideally have no issues with Soldiers understanding and executing the functional elements of the shot process. This will allow trainers to focus on transitions and magazine changes for concurrent training, creating familiarity with the scenario. The more exposure Soldiers get with the course of fire, the more proficient and lethal they will become.

Notes

[1] https://www.benning.army.mil/Infantry/199th/MMTC/

[2] Training Circular (TC) 3-22.9, *Rifle and Carbine*, May 2016, 5-11.

[3] Note: In the new course of fire, magazine retention is not required.

[4] TC 3-20.0, *Integrated Weapons Training Strategy*, June 2019, Table 3-1.

[5] TC 3-20.40, *Training and Qualification – Individual Weapons*, July 2019, 1-38.

SSG Adam Olszak is a former drill sergeant of Fox Company, 2-54 IN, 198th Infantry Brigade.

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At the time this article was written, **CPT Joseph Nyhan** served as the commander of Fox Company, 2-54 IN, 198th Infantry Brigade.

At the time this article was written, **LTC Chris Ricci** served as the commander of 2-54 IN, 198th Infantry Brigade.

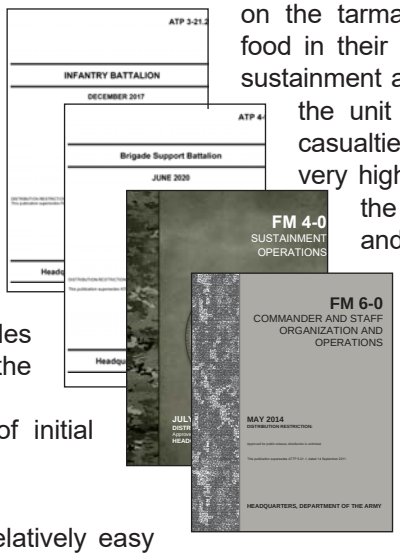
A trainee in the 2nd Battalion, 54th Infantry Regiment prepares to fire from a barrier during marksmanship training.

Battalion Sustainment Planning Trends at JRTC

CPT ANDY WOOD

Most battalions struggle to sustain themselves efficiently during rotations at the Joint Readiness Training Center (JRTC) at Fort Polk, LA. The individual problems manifest themselves differently (some units run out of water, some run out of fuel, some don't get construction materiel or ammunition on time), but there are three root causes observer-coach-trainers (OCTs) see in each case:

- A lack of clearly defined organizational roles and responsibilities between the S4 and the forward support company (FSC) leadership;
- The absence of bottom-up refinement of initial plans; and
- A lack of sustainment rehearsals.



The good news is that these trends are relatively easy to address with a well-practiced plans standard operating procedure (PSOP). This article offers insight into what successful sustainment planning looks like for a battalion S4 (logistics officer) from receipt of a mission through execution of the sustainment rehearsal.

Organizational Responsibilities during the Military Decision-Making Process (MDMP)

The first negative trend is that units come to JRTC without a strong understanding of "who" is responsible for "what" when creating the battalion sustainment plan during the MDMP. The lack of clarity between the battalion staff and the FSC leadership creates sustainment plans that are underdeveloped, inefficient, and lack the prioritization required for maneuver forces to effectively seize, retain, and exploit the initiative as described in Army Doctrine Publication (ADP) 3-0, *Operations*.

A recent airborne rotation encapsulated the real-world consequences of bad sustainment planning. The battalion staff's failure to prioritize water during a joint forced entry (JFE) created such significant safety issues that OCT intervention was required to prevent serious health and safety problems from dehydration and heat stroke. Battalion projections for water consumption didn't take environmental factors and high operational tempo into account when planning for the lag between P-hour and the opening of ground lines of communication (GLOC). As a result, each paratrooper was expected to make a single camelback last from pre-jump activities until the arrival of the ground force more than 36 hours after P-hour. The battalion had no way to top off water on the tarmac, prioritized additional ammunition and food in their door bundles over water, and placed no sustainment assets on the airland echelon. As a result, the unit had an unusually high number of heat casualties while waiting to board the aircraft, a very high number of heat casualties while seizing the objective and expanding the lodgment, and a high number of heat casualties while combat power flowed into theater. The rush to think about "combat power" solely in terms of weapons, ammo, and paratroopers created a situation where disease/non-battle injuries (DNBI) from dehydration were significantly higher and more severe than casualties inflicted by the enemy (opposing force [OPFOR]).

One of the basic problems that battalions create for themselves is that they lack a clear and codified division of labor between the FSC commander and the battalion S4. The S4's primary focus during MDMP should be to create executable guidance for the FSC and line units through the creation of Annex F of the operations order (OPORD). This frees the FSC commander to focus on execution of sustainment and the rest of his/her command responsibilities (rehearsals, training, OPORDs, local security, Soldier health and welfare, property management, maintenance, etc). Following the detailed descriptions found in Army Techniques Publication (ATP) 3-21.20, *Infantry Battalion*, ATP 4-90, *Brigade Support Battalion*, Chapter 2 of Field Manual (FM) 6-0, *Commander and Staff Organization and Operations*, and FM 4-0, *Sustainment Operations*, would greatly reduce operational strife.

When this division of labor isn't deeply ingrained through practice, the FSC commander is often drawn away from command responsibilities and into the battalion MDMP cycle. S4 positions in infantry battalions are coded for Infantry officers specifically because they are most familiar with the expenditures of all classes of supply required for specific tactical operations, not because they are technical experts in sustainment execution.

During a recent defense, the S4 took an overly broad interpretation of the line between execution and planning. The S4 felt that simply consolidating requests from the rifle companies and submitting the requests to brigade constituted sufficient planning for the defense. As a result, the FSC commander had to create almost the entire plan

as the situation developed, becoming heavily involved in determining priority of support for class IV, negotiating with the brigade support battalion and brigade S4 for any available construction material (battalion S4 never followed through on making sure that requests sent in routine logistics reports had been resourced), and coordinating all class IV drop-off points with line units. This resulted in the FSC running numerous unplanned convoys with fatigued drivers, inadequate rehearsals, and failure to provide maneuver forces maximum time to emplace obstacles. The OPFOR easily penetrated or bypassed all of the battalion's turning obstacles and exploited the brigade rear area, destroying the brigade headquarters in short order.

Unfortunately for a battalion S4 at the tactical level, the sustainment umbrella is extremely vast, and the doctrinal references cover a lot of material that is applicable mainly at the operational and strategic levels, with the expectation that personnel at the tactical level will be able to draw out and apply broad principles to their specific situation. Below are OCT observations on how sustainment planners can best apply FM 6-0, FM 4-0, and FM 4-95, *Logistics Operations*, at the tactical level. Once the battalion has begun the MDMP cycle, the S4 has four primary tasks to complete:

- Generate staff estimates for the battalion commander;
- Generate requests for information (RFIs);
- Generate requests for support (RFSs); and
- Generate Annex F with the battalion S1 and medical officer (MEDO).

Generate Staff Estimates — The staff estimate covers available combat power across the formation, on-hand stockage for the line units, distribution stocks and available capacity in the FSC, and critical class V/VIII expenditures based on the unit basic load, expected mission, and the timing of when resupply will arrive from higher for follow-on operations. The S4 develops this estimate first by updating all running estimates and confirming capabilities and feasibility with the FSC commander. This lets the battalion commander weigh the relative value of immediate action versus conditions setting and what their options will look like in the near future.

Generate Requests for Information — The creation of RFIs is sub-divided into two separate topics: external RFIs and internal RFIs.

External RFIs usually cover topics dealing with outside enablers. For example: What sustainment am I obligated to send with my detachments? What sustainment assets are coming with our attachments and who is responsible for their requests? If we decide to utilize something other than ground resupply, who is responsible for building and loading those packages? Most importantly, this becomes critical when an armor package or engineer package is attached to a light infantry battalion. During one JRTC rotation, an infantry battalion had an entire engineer section attached to it, but the S4 failed to coordinate with the brigade engineer battalion (BEB) S4 and brigade support battalion (BSB) support operations officer (SPO) to clarify who was supporting that team. When it finally became apparent that the brigade intent was for the infantry battalion to provide fuel and wrecker support for the engineers, this more than doubled the FSC's fuel consumption in 24 hours, leading to additional convoys and delaying support missions to organic companies within the battalion.

Internal RFIs will help focus the S2 and battalion executive officer (XO) in the creation of battalion friendly forces information requirements (FFIRS) and RFIs to brigade. This will include enemy disposition and wide area security responsibilities behind the forward line of troops (FLOT) and terrain and road analysis for the large trucks used by the FSC; it will also generate named areas of interest (NAIs) that cover potential logistics release point (LRP) sites and ambush points along the main and alternate supply routes (MSRs/ASRs), and should seek to confirm or deny current assumptions about battlefield conditions. A recent rotation ran into numerous difficulties when many of the low water crossings and bridges in the battalion area were destroyed by OPFOR as they conducted a tactical withdrawal. The battalion S4, however, assumed that these choke points were still trafficable and didn't make confirmation of that assumption into a priority intelligence requirement for the battalion. While the blown bridges posed a small problem for the infantry, the medical and logistics assets were located

Photo by SGT Ezra Camarena

Soldiers with the 2nd Brigade Combat Team, 25th Infantry Division fill fuel cans during training at the Joint Readiness Training Center at Fort Polk, LA, on 16 October 2020.

on the far side of the destroyed bridges, which forced a long detour through another battalion's area to resupply troops and evacuate casualties. A simple RFI and confirmation with reconnaissance about the condition of a choke point for vehicles would have saved hours of extra driving and allowed the battalion to request engineer support to repair their internal lines of communication.

Generate Requests for Support — Requesting outside support requires immediate action because you have to work within the planning cycle of so many different units. The most common friction points are the need to request key types of ammunition and troop transport. While most ammunition requirements can be resourced internally to the brigade after bottom-up refinement occurs, the need for troop transportation must come from echelons above brigade (EAB) sustainment units because of the force re-design of brigade combat teams (BCTs) in the mid-2010s. The current force design places all troop transport capabilities and responsibilities into EAB sustainment units. While EAB units can theoretically meet the demand requirements for an entire BCT, this method requires a much higher level of synchronization with longer lead times to flatten the demand curve since EAB units often cannot fulfill both their division taskings and all of the brigade requirements simultaneously.

As soon as an initial requirement is determined, the battalion S4 needs to send up a transportation movement request (TMR) to brigade so that division sustainment planners can prioritize and allocate resources against requirements. TMRs get routed through brigade to division; then they are sent back down through the division sustainment brigade (DSB) to the division sustainment support battalion (DSSB), which tasks it to a transportation company and finally to a single truck platoon. Confirmation that the requests can/will be supported and any modifications to the request follow a similarly circuitous route. In one positive example, the battalion S4 submitted a TMR for troop transport as soon as the maneuver battalion received the warning order (WARNORD) that it would be conducting air assault operations since the unit would need to go by ground if weather conditions did not permit aerial entry. This allowed sustainment planners to know the maximum amount of ground transportation required if maneuver plans changed.

Once the TMR is sent up and support is confirmed, the battalion S4 also needs to confirm what the command or support relationship (as defined in ADP 3-0) will be. Infantry battalions often expect that units providing troop transportation will be placed under a command relationship (either tactical control [TACON] or operational control [OPCON]) for them until they are no longer needed, while EAB transportation units' default expectation is that support is being provided under the support relationships defined in ADP 3-0 (most commonly general support-reinforcing). This difference in expectations created a significant problem for one unit when the truck squad performed a troop drop-off at the specified location but then quickly left the area to return to base and carry out other missions. The infantry battalion had expected it to be readily available to pick them up and was greatly surprised to learn that transportation off of the objective was not included in the TMR, would not be supported since the request needed to be at least 96 hours out, and that it had no official authority over the supporting unit. The infantry battalion then had to dump cargo off of its own trucks and conduct the movement, which significantly hampered the battalion's ability to retain the initiative and exposed it to significant risk because internal assets were now committed to troop transportation.

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Generate Annex F — FM 6-0 codifies the S4's ownership of all aspects of the sustainment plan, detailing that he/she creates Annex F, Appendix 1 "Logistics" (with the advice of the FSC commander) and incorporates the sub-sections, Appendix 2 (created by the S1) and Appendix 3 (created by the MEDO). Collecting the relevant information for Annex F, Appendix 2 from the battalion S1 and Annex F, Appendix 3 from the battalion MEDO is a small but overlooked part of staff organization. Since these are independent sections, the battalion XO must ensure that the information generated during MDMP (casualty estimates, battalion aid station [BAS] location, time distance analysis, and critical class VIII needed) is efficiently sent to the S4 and incorporated into Annex F. Prior to publication, the S4 needs to coordinate with the FSC commander to confirm feasibility of the plan.

All of these items (staff estimates, RFIs, RFSs) need to go into the initial Annex F of the WARNORD published by the battalion so that companies have good information for conducting bottom-up refinement.

Refine Sustainment Projections

Once the battalion has published initial estimates through the WARNORD, the line companies should begin conducting bottom-up refinement and integration of the tactical plan and the sustainment plan. For the company XO and first sergeant (1SG), this includes the timing of resupply of basic commodities (class I/III/IV/VIII), troop transportation, and specific analysis of medical planning and class V consumption. While most companies conduct refinement of the medical plan, refinement of the class V requirements is often not discussed thoroughly.

Enemy activity makes class V consumption highly variable, but companies can use their mission set, S2 estimates of enemy strength, training proficiency, and company SOPs to project consumption of key types of ammunition. This helps the company and the battalion S4 develop realistic criteria for an "emergency resupply" and begin resourcing shortfalls. Again, any requests for support that are external to the battalion must be sent up as early as possible. The box below is an example of a delta company XO refining class V expenditures for an assault on the village of Sangari and refining resupply trigger points to pass back to the battalion S4.

Conduct Sustainment Rehearsals

It's an enduring trend that once a unit starts a rotation there is a significant decline in diligence about conducting the four rehearsals covered in Chapter 12 of FM 6-0. Deliberate sustainment rehearsals are often the first items skipped. There are a wide variety of excuses, but the most common ones are "no time to conduct one" and "don't need one because we did the combined arms rehearsal" (CAR). While this practice may work in the short term, taking a haphazard approach to sustainment rehearsals will rob a commander of operational reach and deny friendly forces freedom of

Example of a Delta Company XO Refining Class V Expenditures and Resupply Trigger Points

The battalion commander's intent for Delta Company is to isolate Sangari. S2 estimates that there are five BMPs with explosive reactive armor (ERA) in the vicinity of Batoor Village that will attempt to reinforce Sangari Village once the attack begins and another 2xBMPs and 4xT-80s at Dara Lam Village that will arrive for counterattack four to six hours after we've seized Sangari. S2 also stated that it's equally likely that the OPFOR will approach from the north (MSR Steel) or from the low water crossings to the east. The company commander wants 1st Platoon to cover the approach from the north and 3rd Platoon to cover the approach from the east. The ERA on the BMPs mean that we'll have to take at least two shots to get a mobility or catastrophic kill on each BMP. The crews from 1st Platoon guarding that northern route took double their allotted ammo when they conducted gunnery last month so I doubt they've improved their first round hit probability that much more in three weeks. I'd say that we will need 12-16 TOW shots at either location to destroy all enemy armor coming from Batoor.

Since the S2 estimate is that the enemy reserve force available for immediate counterattack consists of 2xBMPs and 4xT-80s with ERA, we will need 22 TOW shots to meet that threat at either location.

Each platoon has 20 TOW shots on hand, and I have another 20 in reserve in the company supply truck. If it takes 16 shots to destroy the first set of reinforcements, resupplying from the company trains gives me enough to defeat the counterattack and conduct resupply afterwards. Delta Company will require emergency resupply on the objective if we shoot more than 16 TOWs during the initial attack.

The initial estimate from the S4 was that we would be filled to our basic load on TOWs this afternoon but not receive any additional star clusters and flares. I need to request 10 additional green and 10 red star clusters, since our company uses green stars to signal contact and red stars to signal the need for reinforcements. Also our company SOP is that each platoon place trip flares out from their overwatch positions on likely avenues of approach so I'll need to request six more of those to cover all of the avenues for both 1st and 3rd Platoons.

Once the battalion S4 has received the bottom-up refinement from each company and specialty platoon, he/she can prepare the full Annex F and finalize priority of support by phase of the operation, along with defining trigger points for emergency resupply. This will be published in the OPORD and confirmed at the sustainment rehearsal. Below is an example Paragraph 4 for the OPORD with full details and sustainment overlay located in Annex F.

Priority of support for this operation during Phase 1 is BN Mortars, D Co, then B Co, C Co, A Co, and Scouts. Phase 2 — No change. Phase 3 is D Co, Scouts, B Co, BN Mortars, A Co, C Co. All units will be filled to their basic load no later than D-1. Emergency criteria for resupply is Mortars reaching 50% UBL (unit basic load) on HE (high explosive) or 30% WP (white phosphorus), D Co firing more than 16 TOW missiles during phase 1, B Co reaching 20% UBL on 7.62 link. Emergency class V resupply to the company LRPs will be held by the distro platoon in the FSC. Release authority for emergency resupply is the BN S3 or BN XO. Emergency LRP grids for each element to follow: Mortars — VQ 1234 5678; D CO — VQ 1256 5634; B Co — VQ 1289 5693.

Medical priority of support during Phase 1 is BN Mortars, D Co, then B Co, C Co, A Co, and Scouts. Phase 2 — No change. Phase 3 is D Co, Scouts, B Co, BN Mortars, A Co, C Co. MASCAL (mass casualty) criteria are any unit taking more than 16 urgent/surgical cases or 32 urgent cases in less than 1 hour. Release authority for the BN CASEVAC (casualty evacuation) package is the BN S3 or BN XO. AXP (ambulance exchange point) grids for each element to follow: Mortars — VQ 1234 5678; D Co — VQ 1256 5634; A and C Co — VQ 1289 5693; Scouts — VQ 1256 5634. Based on the feedback from B Co, their AXP will be located at VQ 1299 5680.

Photo by SGT Michelle U. Blesam

The 1st Brigade Combat Team, 82nd Airborne Division staff take part in a combined arms rehearsal during decisive action rotation 19-08.5 at Fort Polk on 24 July 2019. FM 4-0 recommends that the sustainment rehearsal be conducted immediately after the CAR.

action, especially when the maneuver plan literally creates barriers along the unit's lines of communication, like it did during a recent defense. For this battalion, one company decided to orient the kill zone for its company linear ambush directly towards the battalion role 1 and combat trains command post (CTCP) (which were well within the surface danger zones [SDZs] for the company's weapon systems). Simultaneously, the battalion emplaced anti-tank ditches and 11 row obstacles along the only viable medical evacuation (MEDEVAC) routes, effectively cutting off the troops at the front from medical support above the line medic. None of this was effectively briefed at the CAR, and the unit skipped the sustainment rehearsal. As a result, no company had a solid mitigation for the fact that ground medical evacuation would be almost impossible once the defense started and obstacles were closed.

FM 6-0 outlines the four types of rehearsals that a unit needs to conduct before operations: backbrief, CAR, support rehearsals, and battle drill/SOP rehearsal. FM 6-0 also specifies the XO as the unit rehearsal director. "Support rehearsals" is an umbrella term for rehearsals of the specifics of the warfighting functions. FM 4-0 recommends that the sustainment rehearsal be conducted immediately after the CAR. The reason for setting it after the CAR and the fires rehearsal is so that any changes to the fires and maneuver plans can be immediately acknowledged by the FSC and S4. The sustainment rehearsal should not become a planning session. While there is no doctrinal length of time, anecdotal observation reveals that effective sustainment rehearsals take about 30-60 minutes. The box on next page is a suggested sustainment rehearsal script, formatted for easy inclusion into a unit planning SOP. If the sustainment rehearsal is conducted immediately following the CAR or fires rehearsal, the battalion assistant S3 briefing can be omitted, although they should remain in the audience per FM 4-0 to provide any clarification needed about overall battalion scheme of maneuver.

Conclusion

Getting logistics right is challenging, but units can improve their chance at success with practice in three key areas:

- Codify the responsibilities, inputs, and outputs of the S4 during MDMP;
- Enforce bottom-up refinement of the sustainment plan; and
- Conduct a detailed sustainment rehearsal.

Treating sustainment as an afterthought that gets taken care of by magic means that Soldiers will have heatstroke while marching to the objective, run out of ammunition while fighting the enemy, or bleed out and die before they could get transported because no one checked to see if the road was actually passable for an ambulance.

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Example Sustainment Rehearsal Script

a. Preparation. Per FM 6-0, the XO is the battalion rehearsal director. The S4 will coordinate and lead the rehearsal, but validation of the company sustainment plans is the responsibility of the battalion XO.

b. Agenda

BN S4: "THE PURPOSE OF THIS REHEARSAL IS TO ENSURE THAT SUSTAINMENT REQUIREMENTS ARE UNDERSTOOD AND SYNCHRONIZED ACROSS THE OPERATION. THIS REHEARSAL COVERS PHASE Y (D+/-X ; H+/-X) through PHASE Z (D+/-X ; H+/-X)"

(1) (BN AS3) Tactical overview of battalion scheme of maneuver
(2) (BN S4) Key sustainment nodes applicable to the BN
(3) (BN S4) BN place in BDE priorities of support (L-COP)
(4) (BN S4) Execution by Phase (completed for each phase; discuss only changes)
- a. BN priority of support by unit
- b. BN priority of supply by class
- c. Emergency resupply triggers
- d. Transportation Plan — Include when external troop transport will conduct link up, pick-up and drop-off sites, C2 relationship, equipment limitations

(5) (FSC CDR) Distribution Plan — LRP locations and any change in expected on-hand quantity
- a. Sustain: CL I, water, ice, CL IV, CL IX and trash backhaul (location or actions)
- b. Fuel: CL III(B) (location or actions)
- c. Arm: CL V (location or actions)
- d. Fix — Maintenance and recovery nodes (location or actions)
- e. Arrival/departure airfield control group (A/DACG) operations (if required)
- f. FLE (forward logistics element) operations (if required — discuss composition and task/purpose of FLE)

(6) (MEDO/BN PA) Concept of support overview for phase
- a. (BN S1) Casualty estimates, by phase, for the BN.
- b. Medical coverage plan (MEDEVAC/CASEVAC) from ambulance exchange point (AXP) to Role 1 to higher care
- c. 9-Line MEDEVAC request PACE plan

(7) (CO XO or 1SG) — Medical coverage plan (MEDEVAC/CASEVAC) from POI (point of injury) to BAS (Role 1) Current chemical, biological, radiological, nuclear, explosives (CBRNE) threat, primary and alternate decontamination (DECON) site setup with clean and dirty routes, water requirements for DECON of vehicles and personnel
(8) (CO XO) CO concept of support (in order by task organization)
- a. Locations of CO HQ, CO trains, CO casualty collection points (CCPs)
- b. Current headcount, logistics status (LOGSTAT) and total available capacity.
- c. Log estimate for next 24, 48, and 72 hours for the following commodities: CL I, water, CL IIIB, CL IV, CL V, CL VII (losses), CL VIII, CL IX, trash backhaul and field sanitation requirements
- d. Field feeding plan
- e. Maintenance, recovery, and field dispatching plan (QA/QC)
- f. Anticipated personnel losses and replacement operations

(9) (BN S1) Services: Mortuary affairs operations plan and (Chaplain) religious support plan and external religious support
(10) (BN XO) closing remarks and due outs

c. Attendees:
- BN XO
- BN S4
- BN S1
- BN S2/AS2
- BN AS3 (Plans)
- BN S6
- Company XOs
- Company 1SGs
- HHC commander
- FSC commander
- Maintenance PL and PSG
- Distro PL and Distro PSG
- MEDO
- Chaplain
- CBRNE officer
- External enablers (engineers, troop transportation, etc.) as required

Tactical Decision Games in a Virtual Setting

CADET JOHN B. DOUGLAS

During the Spring 2020 semester, Army Reserve Officer Training Course (ROTC) cadets at Rensselaer Polytechnic Institute (RPI) in Troy, NY, and Naval ROTC midshipmen at the University of Illinois adapted to the challenges posed by COVID-19 by organizing online tactical decisions games (TDGs) to continue their military education.

As students prepared to depart the RPI campus for the 2020 spring break, they were advised to "overpack" in the event the break was extended. The gravity of the impact of COVID-19 was setting in. Spring break was indeed extended, and instruction eventually transitioned online for the remainder of the semester. At the time, I was enrolled in "Evolution of Warfare," an elective course offered as part of the ROTC curriculum. Transitioning the course online wasn't ideal, but it was manageable. However, I considered the outright cancellation of "Military Science: Applied Leadership Lab" a problem as it created a void in classroom and practical training in military skills including offensive and defensive operations and patrolling. With the realization that the remainder of the semester would be conducted virtually, I began looking for additional ways to continue my military education.

One of the first reading selections assigned in "Evolution of Warfare" was Marine Corps Doctrinal Publication (MCDP) 1, *Warfighting*. As the son of a Marine (Col Christopher J. Douglas), I was familiar with MCDP 1 as it was a frequent topic of conversation when the two of us engaged in professional military and tactical discussions. We deliberated options for supplementing the diminished ROTC instruction.

My father contacted a colleague and friend former Marine Maj John F. Schmitt, who is not only the author of MCDP 1 but also a pioneer in the use of TDGs in the Marine Corps, to inquire if he would consider conducting an online TDG for RPI ROTC cadets. Schmitt was intrigued by the opportunity to mentor cadets, not to mention more than a little bored from the COVID lockdown, and offered to conduct online TDG sessions for the remainder of the spring semester. Schmitt had served as the Marine officer instructor (MOI) at the University of Illinois Naval ROTC and extended the invitation to participate in the professional forum to the current MOI and Marine option midshipmen there. In total, five cadets from RPI, five midshipmen from the University of Illinois, and one midshipman from Penn State participated in the online learning community. Col Douglas was a regular participant, offering insights from his own combat experiences. Also rotating in and out of the sessions were other combat veterans, cognitive scientists and other researchers, and several first responders looking to do something similar in their own field.

The objectives of this professional learning community were to:

- Improve the tactical decision-making skills of the cadets and midshipmen;
- Improve knowledge of tactical concepts, weapons characteristics and employment, terminology and symbology; and
- Practice issuing combat orders — all in virtual situations characterized by ambiguity, uncertainty, unpredictability, changeability, time-pressure, and competing/changing goals.

At first, it was intimidating for students to have to make tactical decisions and then defend them in front of their peers under such conditions. But they were all interested and committed to the opportunity to expand their knowledge, develop their skills, and interact with other like-minded students. Participating students were provided with an invitation to connect and login to a virtual learning space Schmitt created using Zoom. During weekly engagements, participants received a combat order, generated a tactical plan with limited time, rapidly developed a fragmentary order, and awaited a turn to issue a fragmentary order and defend the rationale for their course of action.

Schmitt created a collaborative battle space using Zoom that included chat, voice, and an annotatable map with movable unit symbols.

The focus was always on teaching the students how to think, not what to think. Students were always expected to explain their decisions and assessments. The most common question Schmitt asked was "Why?" "Why did you decide that?" "Why do you think that?" Schmitt used the scenarios to introduce key tactical concepts like fix-and-flank, tempo, main effort, commander's intent, the reserve, and surfaces and gaps.

We followed the three rules of TDGs:

1. If you're in the room, you're in the game. There is no hiding. It's important that you feel like you could be put on the spot at any moment. This rule also brings all participants into the conversation and invites all perspective on the TDG so we all learn from each other.

2. All decisions must be in the form of the orders you will issue. Providing decisions in the form of an order allows for

cadets to develop experience, confidence, and competence with this technique as they prepare for issuing combat orders as military officers. There is also a moral element to taking responsibility and acting.

3. Leave your rank at the door. It is important that all members speak candidly regardless of rank. The only thing that matters is the quality of your decisions and the strength of your reasoning. As a result, all members use personal call signs to address each other as peers.

Throughout the remainder of the semester, all students developed an enhanced ability to decide, communicate and act. Schmitt provided feedback on tactical planning, order development under time constraints, and order issuing techniques. Other benefits included learning doctrinal terminology, map symbology, and weapons capabilities. The weekly TDGs were supplemented with occasional professional articles.

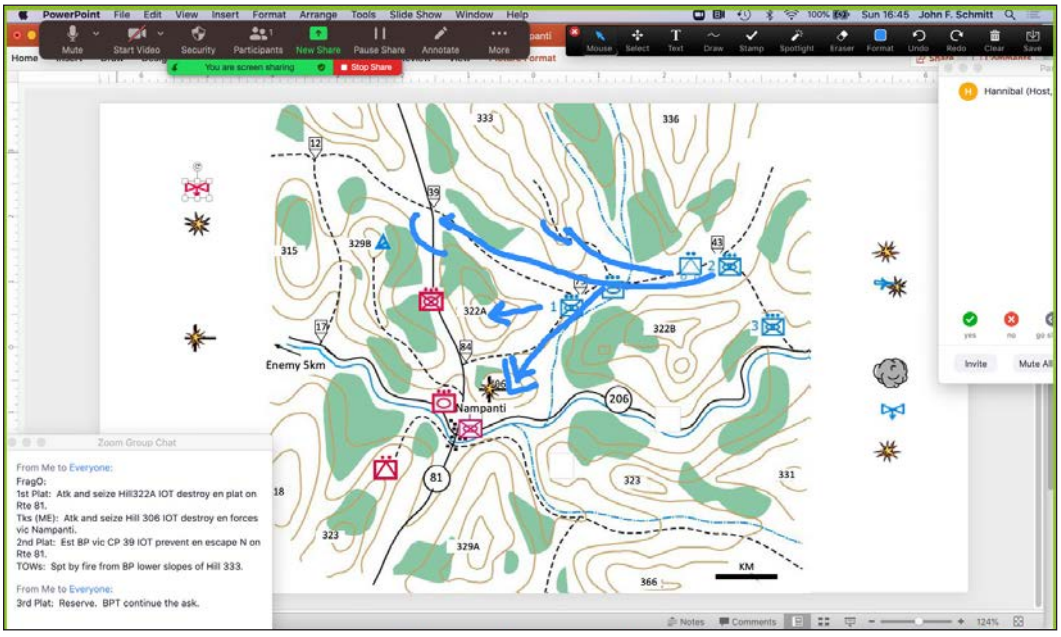
While the ROTC curriculum provides a framework for instruction with respect to Army regulations (ARs), field manuals (FMs), and standardized reports, the TDGs of this distinction allow for interactions and immersion to a level that requires critical analysis and synthesis in order to communicate and execute a mission. Lab/field exercises, which grant cadets on-the-job training, are an important facet in cadet development; however, lab can become a linear process. Weekly, cadets receive their missions on Monday, operation orders (OPORDS) by Tuesday, attend lab/field training on Thursday (executing a standard yearly curriculum), and conduct an after action review (AAR). As a result, lab can become a check-the-box exercise. Conversely, TDGs, at least as we have done them, are fluid, open-ended, and ever changing, offering a greater opportunity for cadet development and the inherent cognitive dimension that organically develops through the practical use of critical thinking. The experience has been like no other training I have received.

The focus was always on teaching the students how to think, not what to think. Students were always expected to explain their decisions and assessments. The most common question Schmitt asked was "Why?" "Why did you decide that?" "Why do you think that?"

Shortly after the end of the semester, the Illinois Marine option midshipmen departed for Officer Candidate School, but the RPI cadets requested the opportunity to continue with the training experience. The training continues and has since expanded to include a force-on-force exercise to simulate the chaotic and unpredictable dynamics of two hostile, intelligent adversaries, each trying to impose itself upon the other.

Taking everything into account, those of us participating expanded our knowledge of military tactics and increased our ability to recognize patterns, assess situations, make decisions, and communicate orders to subordinates. In a recent *From the Green Notebook* article, "Why We All Need to Develop a Daily Habit of Reading," MAJ Joe Byerly states, "The outbreak of war typically catches a nation and its armies by surprise. None of us know if or when we will be called upon to lead formations in battle. This is why time is so critical, and we need to make it our ally." This concept has not been lost on the cadets participating in TDGs for the last four-plus months. Although the on-campus platform of instruction and learning ended in early March, our preparation to become Army officers continued through challenging scenarios, learned from seasoned military officers, which developed our skills and competence, ultimately enhancing the art and science of military leadership.

A Screen Capture from the TDG "Contact at Nampanti"



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Cadet Jevon Schmitz also contributed to this article. He is a junior at The College of Saint Rose and member of the Mohawk Army ROTC Battalion. He is a Green-to-Gold Scholarship cadet, majoring in accounting and minoring in Spanish.

Advancing an Understanding of Military, Robotic Exoskeletons

STEVEN YEADON

This article surveys an understanding of robotic exoskeletons in relation to the infantry.

"Robotic exoskeletons are electronic devices that attach to a human user's body and contain actuators that deliver mechanical power to augment movement. One class of these devices facilitates upper-limb movements such as reaching, grasping, or lifting with the arm or hand. The other primary category of robotic exoskeletons augments lower limb functions such as sitting down, standing up, walking, balancing, and standing. Full body exoskeletons can fulfill a combination of these purposes."[1]

There are three broad types of robotic exoskeletons: assistive devices for those with disabilities, therapeutic robotic exoskeletons for rehabilitation, and human performance augmentation exoskeletons intended to increase strength, endurance, and other physical capabilities of able-bodied people.[2] This last type of exoskeleton is what my analysis will focus on.

Soldiers from the 2nd Cavalry Regiment conduct a 12-mile ruck march near Camp Albertshof, Germany, on 9 December 2015. Exoskeletons can be created to augment human performance to increase strength, endurance, and other physical capabilities.
Photo by SSG Jennifer Bunn

In my opinion, robotic exoskeletons represent more than an enhancement to current infantry. Military, robotic exoskeletons can create a distinct kind of heavy infantry unit that can improve current U.S. Army combined arms teams. This objective may be feasible sooner than one may think if robotic exoskeleton-equipped formations have an expanded logistical footprint, which includes the need for a regular supply of charged batteries as well as other logistical concerns. However, this is an untested future military concept, and my analysis is meant only to stimulate discussion on how to employ exoskeletons in military operations.

This article will cover military applications of exoskeletons, current exoskeleton technologies, previous military concepts, possible solutions to potential issues, and other concerns regarding the employment of heavy infantry using robotic exoskeletons.

Military Applications of Exoskeletons

One of the first planned military applications for robotic exoskeletons gives greater strength and endurance to service members when working with a heavy load.[3] As a logistical and engineering piece of equipment, these exoskeletons would enhance and take the burden off logistics troops performing heavy lifting outside of combat.

A second planned military application for robotic exoskeletons relates to military combat involving Soldiers, Marines, and special operations forces and would provide them relief from the extremely heavy loads they must currently bear in combat situations. The average U.S. Army Soldier must carry around 96-140 pounds of equipment on a three-day mission.[4] The U.S. Marine Corps is adopting a requirement for its infantry to be capable of carrying up to 152 pounds for a nine-mile march.[5]

Four approaches are proposed for solving this problem of the overloaded Infantryman:

- Reduce the weight of the equipment carried by an Infantryman. A caveat of this approach is that ultra lightweight materials are already in use for such equipment, such as Kevlar and carbon fiber.[6]

- Improve human capabilities without more weight. These include new technologies providing superior equipment without more weight, a difficult line of inquiry given the need

to develop advanced technologies and medical human enhancement, although the ethics of this area of inquiry are of the utmost importance.[7]

- Use robots as a kind of "pack animal" to carry heavy equipment. The current Squad Multipurpose Equipment Transport (SMET) program aims to develop a robot to carry 1,000 pounds of equipment for an infantry squad of about nine Soldiers.[8] However, problems facing this option include excessive noise generated by the robots and the need for robots to be autonomous enough not to require additional troops to supervise them.[9]

- Increase the carrying capacity of the Infantryman through exoskeletons to reduce the load they feel like they are carrying.[10] Increasing the load-bearing capability of Soldiers, Marines, and special operations forces, however, may translate into even heavier loads of armor, weapons, ammunition, and supplies being required of them.

A third role for military exoskeletons going into the future will be to provide new capabilities for military combat. This was the goal of Special Operations Command's Tactical Assault Light Operator Suit (TALOS) program. TALOS would give special operations Soldiers improved protection, situational awareness, lethality, and human performance.[11] However, the TALOS program was too ambitious and ended in 2019.[12]

Current Exoskeleton Technologies

An understanding of current exoskeleton technology will give some context for more advanced military technologies. Since much of the information on exoskeleton specifications is protected, this analysis will look at the Sarcos Robotics Guardian XO exoskeleton as an example for some key technological takeaways. This is due to a willingness of Sarcos Robotics to release some of the basic specifications of their technology. That said, the Guardian XO is not meant for military combat and is instead for logistical support.

A general engineering problem is that "you can't maximize strength and speed and agility in the same exoskeleton… any more than you can carry Humvees in an F-16 or dogfight in a C-130."[13] The Guardian XO itself has the ability to lift loads of up to 200 pounds, with heavy loads feeling like only one twentieth of the actual weight.[14] Its battery lasts for eight hours under this strain, and the robot carries three batteries that can be changed or "hot swapped" to keep the exoskeleton going.[15] The batteries weigh 12 pounds each, and the Guardian XO weighs approximately 200 pounds without batteries.[16] Each battery requires 500 watt hours to fully charge, which can be accomplished in less than an hour.[17] This means that a high mobility multipurpose wheeled vehicle (HMMWV) towing a 60-kilowatt generator trailer can theoretically recharge up to 120 batteries in less than an hour.

Additional concerns about the Guardian XO is that the "amount of maintenance required will vary based on customer use cases and the operating environment."[18] This may translate into a need for regular maintenance in the demanding environments military personnel work in. The Guardian XO will need military personnel trained to repair the exoskeletons and spare components for repairs.[19]

Photo by David McNally

A Soldier wears an exosuit while on a treadmill at a U.S. Army Research Laboratory facility at Aberdeen Proving Ground, MD, on 15 June 2017. The suit is part of the Army's Warrior Web Program.

Returning to the subject of robotic exoskeletons designed for military combat, one necessity for exoskeletons in military combat is that "the military user must have the ability to perform the full range of combat movement, to include agile shifts in position, loading and firing a weapon, and running with a full pack."[20] Thus, exoskeletons for military combat will need to do more than just increase strength and endurance like some commercial exoskeletons promise to do. This problem is ultimately one of improving the control systems and mechanisms on robotic exoskeletons through more research.[21] Another issue is that military, robotic exoskeletons will need batteries that last as long as 24-72 hours for standard infantry missions.[22]

There are other exoskeletons in development for military use, however, that may get around the logistical hurdles heavier, hard exoskeletons currently possess. For instance, there are soft exoskeletons that use fabric and other lightweight

materials in place of rigid structures made from materials like metal. The Wyss Institute has developed soft "exosuits" that provide mechanical power while walking without need for a heavy, often metallic exoskeleton.[23] The Defense Advanced Research Projects Agency (DARPA) is developing an exosuit called Warrior Web that will function as a conformal under-suit (like a diver's wetsuit) to be worn underneath military equipment and body armor. Warrior Web aims to prevent musculoskeletal injuries during military operations using a system (or web) of actuators, transmission, and functional structures to protect injury prone areas.[24]

Other examples include ONYX, a lower body robotic exoskeleton produced by Lockheed Martin in partnership with B-Temia and based on B-Temia's KSRD Dermoskeleton™ technology; ExoBoot, a lower body exoskeleton produced by Dephy; and ExoBuddy, a load-bearing exoskeleton produced by Intespring. These exoskeletons have the promise of reducing fatigue and increasing endurance for infantrymen when performing overland marches.

A Previous Proposal for Heavy Infantry

In a 2018 *INFANTRY* article, CPT Matthew Allgeyer proposed the idea of a heavy infantryman that would "be fundamentally different than any previous infantryman armed with a gun."[25] Materiel define heavy infantry since they will be a shock unit with heavier ballistic armor to maneuver while under small arms fire and employ heavier weapons than those used by light infantry units common today.[26] Heavy infantry will also have increased protection against shrapnel, reducing the effective blast radius of enemy indirect fires. The heavy infantry concept would require the adoption of new materiel designed for heavy infantry based on testing. However, there will still need to be a balance between protection and firepower with mobility and flexibility. In modern high-speed and kinetic fights, heavy infantry will need to be ready for combat when initial contact is made.[27] This concept of increased lethality and survivability for infantrymen is a surprisingly similar idea envisioned for exoskeleton-equipped soldiers using TALOS. Allgeyer's proposal may indicate where exoskeleton technology is taking the infantrymen of the future.

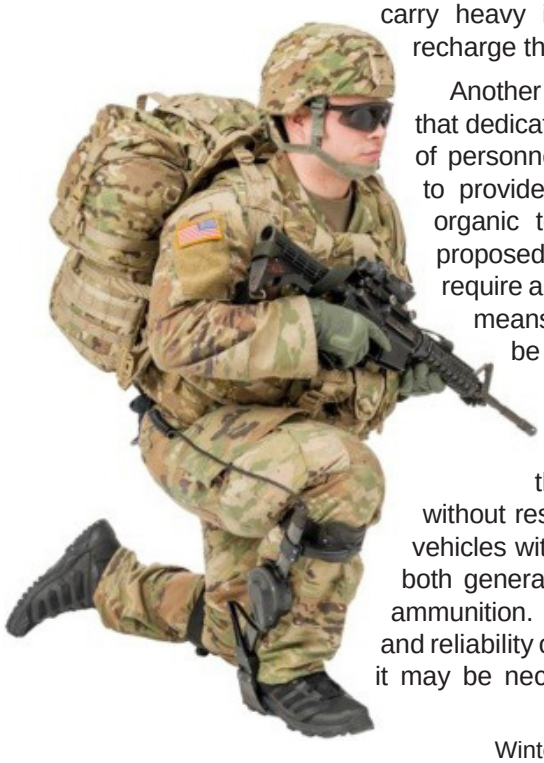
Additionally, Allgeyer proposed that heavy infantry use Bradley fighting vehicles to transport troops to the point of decision in battle. However, he noted that the Bradley is not a perfect solution since it is not optimized for troops of greater size and weight than normal. Infantry brigade combat teams (IBCTs) may also lack the ability to incorporate such vehicles into their force structure.[28] However, given the U.S. Army's infantry squad vehicle program, light transports for heavy infantry may be purpose-built to keep up with an increasingly mobile IBCT.

Allgeyer noted that heavy infantry may be particularly useful in urbanized terrain due to the increased protection, which will make them more resistant to small arms fire. This will give heavy infantry the opportunity for greater risk against an enemy, and it will provide shock and firepower against individual point targets in an urban environment. Heavy infantry will force an enemy to consolidate heavier weapons and be more deliberate with setting defenses to counter, reducing their freedom of maneuver, making them easier to maneuver against, and constraining them to more readily identifiable points of advantage.[29]

As Allgeyer also noted, an opportunity exists to use exoskeletons in military combat sooner than previously predicted. Batteries need not last three days if the assumption is that exoskeleton units need a continuous supply of charged batteries. Allgeyer proposed that the armored vehicles that carry heavy infantry into combat could recharge their batteries.[30]

Another idea this article proposed is that dedicated trains — "a unit grouping of personnel, vehicles, and equipment to provide sustainment" — could be organic to exoskeleton units.[31] The proposed heavy infantry units will require a kind of fuel — batteries. This means that charged batteries must be provided at regular intervals of time. Such units will be tethered to a logistic supply chain that may require that they not operate for long without resupply. Trains would provide vehicles with towed generators, fuel for both generators and light vehicles, and ammunition. Depending on the weight and reliability of exoskeleton technologies, it may be necessary to include recovery

Other examples of exoskeletons under development include the ONYX (left) and the ExoBoot (right).
Photo courtesy of RDECOM Soldier Center



vehicles for damaged or disabled exoskeletons and vehicles with maintenance personnel and lightweight exoskeleton components for repairs. Furthermore, trains will need protection against enemy attack. This may require additional armed vehicles to provide security.

Another possible idea is to incorporate a variant of the Optionally Manned Fighting Vehicle (OMFV) into IBCTs utilizing heavy infantry. Such an OMFV variant will be designed for larger, heavier infantrymen and would have an alternator capable of recharging exoskeleton batteries. Additionally, the OMFV will have a 50-millimeter automatic cannon with an effective range of 4 kilometers using a variety of ammunition types including armor-piercing rounds and airburst rounds able to defeat enemies in defilade.[32] These capabilities could be as revolutionary to introduce to the IBCT as the planned mobile-protected firepower light tanks.

These two ideas of how to work around limited energy density in current man-portable power sources could allow for military exoskeleton research to aim primarily for advancing and ruggedizing the materials, sensors, actuators, and controllers for robotic exoskeletons.

Further Insights on the Application of Robotic Exoskeleton-Equipped Heavy Infantry

The role of exoskeleton units in need of regular resupply will need further examination. This article will review some of the new capabilities created by such units to incentivize further discussion.

To begin, a problem arises in that, for the near-term, units equipped with exoskeletons will require vehicles to act as a trains for them, or such units will need vehicles to transport them and recharge batteries. This means that units equipped with exoskeletons will need to stay close enough to their vehicles for resupply or will need regular air resupply. This could severely limit the range of foot-mobile troops equipped with exoskeletons. It also means that Soldiers, Marines, and special operations personnel equipped with exoskeletons will be vulnerable to having their resupply cut off if enemy units target their trains or isolate them from resupply, such as through a siege. Units equipped with exoskeletons will also need an assessment as to whether they have too much of a logistical footprint for operations in austere environments such as forcible entry operations.

An important consideration is that a unified force of exoskeleton-equipped heavy infantry will not be as effective as presenting an enemy with a combined arms team. The U.S. Marine Corps tactics manual states that combined arms presents enemy not merely with a problem but a dilemma — a no-win situation. The combination of maneuver, supporting arms, and organic fires combine in such a way that any action the enemy takes to one threat makes him vulnerable to another.[33] The combination of exoskeleton-equipped heavy infantry and traditional infantry serving as light infantry in the maneuver element may add another factor that an enemy must overcome.

As stated earlier, heavy infantry equipped with exoskeletons could be effective in situations where they are rapidly transported to the point of decision in battle. Such exoskeleton-equipped units could also act as support units providing shock and firepower in larger infantry formations, such as infantry battalions. Soldiers, Marines, and special operations personnel equipped with exoskeletons and serving as heavy infantry may present a superior force to using purely light infantry in restricted or severely restricted terrain. Additionally, heavy infantry equipped with exoskeletons may be best for house-to-house, room-to-room combat. Such troops may be effective when sieging enemy forces, such as in an urban area. Two examples in recent memory are the first and second battles of Fallujah. Troops equipped with exoskeletons face the same limitations as infantry units: a limited decontamination capability if exposed to chemical, biological, radiological, or nuclear (CBRN) weapons and a vulnerability to enemy armor, artillery, and air assets when employed in open terrain.[34] This only enhances the role of exoskeleton-equipped units in urban areas or restricted/severely restricted terrain. However, a key restraint of these ideas is the need to not stray far from the vehicles providing logistic support.

It is also prudent to analyze whether it is an effective idea for heavy infantry to "dismount" from their exoskeletons and turn into light infantry if needed, due to such things as damage to the exoskeleton, depleted batteries, or tactical concerns. If exoskeleton-equipped heavy infantry have heavier armor and weapons than light infantry, then it would be prudent to study whether such armor could be modular and quickly taken off except for an armor package like light infantry. The goal would be to radically reduce the weight carried by dismounted infantrymen for improved mobility. It may also be prudent to include a carbine and ammunition as standard equipment for use if dismounted or as a secondary weapon if heavier weapons run out of ammunition.

Mechanized infantry units may benefit by having a mix of light and exoskeleton-equipped heavy infantry with the necessary changes needed for expanded logistic support. Stryker brigade combat teams (SBCTs), which lack the armor or firepower of heavier armored vehicles and are an infantry-centric force, may especially benefit by incorporating heavy infantry. Transporting Soldiers equipped with exoskeletons, along with light infantry to support them, may give an SBCT an even greater advantage against enemy infantry units. This could prove very useful against irregular military forces such as terrorists or insurgents or against the light enemy forces of a nation-state. This improved capability could improve the role of SBCTs in operations to consolidate gains, which are "activities to make enduring any temporary operational success and set the conditions for a stable environment allowing for a transition of control to legitimate authorities."[35] Armored brigade combat teams (ABCTs) may be improved if a mix of heavy infantry equipped with exoskeletons and light infantry can achieve overmatch consistently against enemy mechanized infantry units — thus, helping to mitigate

the dilemma presented by mechanized infantry as part of an enemy's combined arms team.

Another possibility is to field heavy infantry equipped with exoskeletons as defensive units by making them protectors of forward operating bases, which can provide fuel and generators to sustain them. This could lead to improved lethality and protection for infantry defending such bases.

Major Concerns Regarding Robotic Exoskeleton-Equipped Heavy Infantry

There are a variety of concerns about the use of heavy infantry equipped with military, robotic exoskeletons. First, a larger logistical footprint may hurt infantry units in regard to one of their capabilities — a smaller logistical footprint in relation to other types of units.[36] One example of how a small logistical footprint can change the course of an operation is during a siege, such as what occurred during the siege of Bastogne in the Battle of the Bulge. Sieges are a real possibility in the future, especially in a war with a near-peer such as Russia, which uses battalion tactical groups that excel at sieges.[37] A key question becomes how infantry units will fare when wedded to robots down to the infantry squad, platoon, and company levels. This is especially troubling if U.S. troops endure a siege. Even attaining a 72-hour battery life may leave U.S. troops at a distinct disadvantage.

Second, exoskeletons affect strategic mobility since a heavy infantry company will need expanded vehicles for their logistical needs. For instance, a U.S. Army infantry company currently requires a Family of Medium Tactical Vehicles (FMTV) truck towing a water buffalo and a HMMWV with towed trailer.[38] However, an infantry company with exoskeletons will likely need an additional HMMWV to tow a generator for recharging batteries and another to tow a trailer for carrying fuel to support it. Depending on the weight and size of the exoskeletons, there may also be a need for a HMMWV to tow a trailer with spare parts, a Soldier (or multiple Soldiers) trained to repair exoskeletons, and at least one more FMTV with equipment to hoist heavy, inoperable exoskeletons for recovery. This need for additional vehicles should be similar across the joint force. Thus, logistical concerns for exoskeletons mean that a heavy infantry company will require more transport aircraft to deploy to a theater.

Third, Soldiers in exoskeletons that are rendered inoperable in combat are then dismounted cavalry, having lost their amazing edge in the form of their "mount." Suddenly what could be a 150 pounds or more of equipment will put its full strain on a Soldier. This may require infantrymen to make hard decisions, while in combat, about what to take with them or leave behind.

Fourth, if Soldiers, Marines, and special operations forces in exoskeletons weigh considerably more than they currently do, then this may change air assault planning and possibly even planning for ground vehicles. This is because these vehicles may have their range before refueling decreased due to carrying a heavier load. This may also mean fewer troops transported per aircraft or ground vehicle. This could have a major effect on unit organization as compared to current infantry units.

Sieges are a real possibility in the future, especially in a war with a near-peer such as Russia, which uses battalion tactical groups that excel at sieges.[37] A key question becomes how infantry units will fare when wedded to robots down to the infantry squad, platoon, and company levels. This is especially troubling if U.S. troops endure a siege. Even attaining a 72-hour battery life may leave U.S. troops at a distinct disadvantage.

Fifth, when operating in open terrain, one key restraint for exoskeleton-equipped heavy infantry units will be their comparable utility to an armed light vehicle, such as the new Joint Light Tactical Vehicle (JLTV). This is because troops equipped with exoskeletons will likely have the same limitations as small infantry units. These may be limited decontamination capabilities if exposed to CBRN weapons and vulnerabilities to enemy armor, artillery, and air assets when employed in open terrain.[39] A primary issue is that a JLTV, or unit of JLTVs, may also cost less than the exoskeletons needed for a squad. The JLTV's unit cost for a loaded field-equipped model is under $399,000.[40] Depending on the unit cost of exoskeletons, the JLTV may be a bargain for its capabilities in open terrain. For now, the monetary cost of military exoskeletons is unclear, but it is vital information for understanding the comparable role to a unit of JLTVs.

Lastly, there are a variety of threats to infantry wearing heavier armor using exoskeletons, especially when facing a near-peer military. These include grenades and grenade launchers, shoulder-launched missiles, improvised explosive devices, heavy machine guns, medium and large caliber guns, and incendiaries. This means that potential enemies could adapt their tactics and equipment to best counter heavy infantry wearing exoskeletons. However, such an enemy force will require heavier equipment that will then negatively affect their maneuver and require more support requirements for their formations.[41]

Conclusion

In summary, there are three primary military applications for robotic exoskeletons. This article centered on how robotic exoskeletons may improve human performance in combat operations through the concept of modern heavy infantry. In the near term, if trains or transports that can recharge batteries are assumed and current unified infantry are left as a distinct type of light infantry unit, then exoskeletons may be able to help troops in combat sooner as an improved combined arms team. These two solutions to work around limited energy density in current man-portable power sources

could allow for military exoskeleton research to aim primarily for advancing and ruggedizing the materials, sensors, actuators, and controllers for robotic exoskeletons.

The combined arms team incorporating both light infantry and exoskeleton-equipped heavy infantry formations may excel in restricted or severely restricted terrain, in military operations on urban terrain, in defensive operations, and as a shock unit against enemy infantry formations. Exoskeleton-equipped heavy infantry formations may also be a highly effective force when transported to the point of decision in battle. However, this will require new materiel for exoskeleton-equipped units from ground vehicles to armor, weapons, sensors, and other equipment.

These new capabilities will require an expanded logistical footprint with current technologies. There will be a need for charged batteries, generators to recharge batteries, fuel for generators, and potentially more and heavier ammunition. Depending on the reliability and weight of robotic exoskeleton technology, there may also be a need for repairs by dedicated personnel with lightweight spare components, recovery when disabled in field, and maintenance.

There are limitations to the use of robotic exoskeleton-equipped heavy infantrymen. Such formations will have a need for more vehicles and heavy equipment, which will affect strategic mobility. Such heavy infantry formations will require more support. Infantrymen that shed their exoskeleton, if rendered inoperable, will drastically reduce their utility in combat and force difficult choices about what heavy gear to take with them. Robotic exoskeletons used by heavy infantry will impact air-assault and ground-vehicle planning due to the increased weight and size of exoskeleton-equipped infantrymen. If near-peers change their tactics and materiel, then they can counter a unified force of heavy infantrymen equipped with exoskeletons; however, this will make their forces heavier and less capable of maneuver. A unified force of heavy infantrymen equipped with exoskeletons will lack the combined arms offered by a combination of light and heavy infantry. JLTVs may represent a superior and potentially more cost-effective force on open terrain. Lastly, a unified force of exoskeleton-equipped heavy infantrymen will lack some of the advantages of infantry formations, such as the ability to continue fighting if cut off from resupply.

However, this analysis is still an untested future military concept, and it is meant to generate discussion further on how to employ military, robotic exoskeletons.

Photo by David Kamm

For dismounted Soldiers in the field, one of the most common injuries is from carrying nearly 100 pounds of gear for extended periods, often over rough terrain. Exoskeletons could help injured warfighters maintain mobility and combat-effectiveness.

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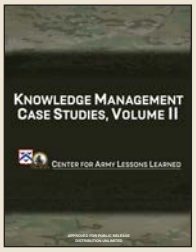
New from the Center for Army Lessons Learned

FY20 Mission Command Training in Large-Scale Combat Operations: Mission Command Training Program (MCTP) Key Observations

The information in this bulletin is a snapshot of the Army conducting large-scale combat operations. MCTP's observations are primarily written by a collaborative group of experienced officers, NCOs, and chief warrant officers working in conjunction with our highly qualified expert-senior mentors. MCTP uses several avenues to facilitate shared understanding of Warfighter Exercise (WFX) experiences to educate not just those units preparing for WFXs, but the total Army. Beginning in FY21, the MCTP WFX key observations will be published semiannually by CALL.

https://usacac.army.mil/sites/default/files/publications/18085.pdf

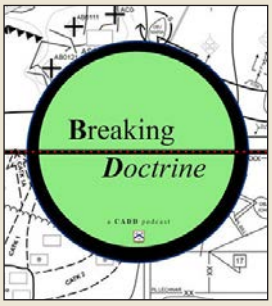


Knowledge Management Case Studies, Volume II

These Knowledge Management (KM) case studies highlight where an empowered KM officer applied KM principles to solve a problem. The KM officers in each case study achieved success by exercising initiative, applying critical and creative thinking, and ultimately delivering a capability or process that made their teams more effective and efficient. The Army's data, information, and knowledge environment will continue to become more complex. These case studies provide illustrative examples of KM practices in action, and stimulate thinking among leaders and staffs looking to harness the power of KM in their headquarters.

https://usacac.army.mil/sites/default/files/publications/KM_Vol2.pdf

Breaking Doctrine Podcast



The Combined Arms Doctrine Directorate (CADD) presents episode 2 of its "Breaking Doctrine" podcast series: "North Korean Tactics." This podcast complements the release of Army Techniques Publication 7-100.2 of the same name. In this episode, CADD Director COL Rich Creed and experts from Training and Doctrine Command G2 discuss this publication and how this adversary's forces think and act at the tactical level. Listen today on Apple or Google podcasts.

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