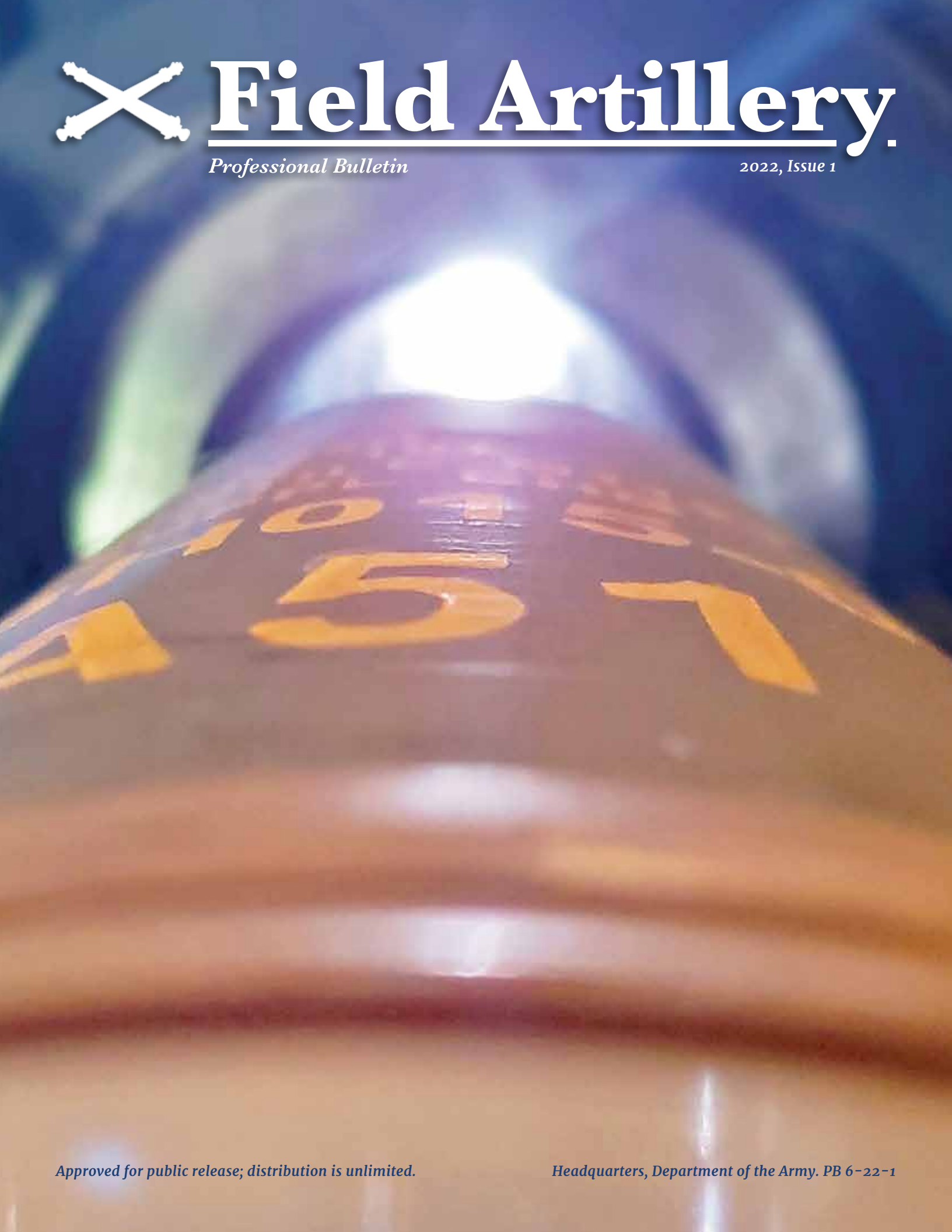

Field Artillery

Professional Bulletin

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Contents

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Purpose

Originally founded as the Field Artillery Journal, the Field Artillery Professional Bulletin serves as a forum for the discussions of all U.S. Army and U.S. Marine Corps Field Artillery professionals, Active, Reserves and National Guard; disseminates professional knowledge about progress, development and best use in campaigns; cultivates a common understanding of the power, limitations and application of Fires, both lethal and nonlethal; fosters Fires interdependency among the armed services, all of which contribute to the good of the Army, joint and combined forces and our nation. The Field Artillery Professional Bulletin is pleased to grant permission to reprint; please credit Field Artillery Professional Bulletin, the author(s) and photographers.

Cover

An M109A6 Paladin Howitzer of Charlie Battery, 2nd Battalion, 142nd Field Artillery Brigade, prepares to load and fire a round during a fire mission at the Fort Chaffee Joint Maneuver Training Center near Barling, Arkansas, May 14.

U.S. Army National Guard photo by SPC Stephen M. Wright

Long-Range Fires imperative for LSCO

By BG Andrew D. Preston

What a great time to be a Redleg! The state of the Field Artillery is strong. Today the Field Artillery is modernizing and adapting advanced technologies, and changing the conditions of warfare to meet present and future challenges with renewed emphasis. Senior leaders recognize the importance of increasing range, lethality, and growing our ability to synchronize Command and Control to achieve success in Large-Scale Combat Operations (LSCO) in today's Multi-Domain Operating environment.

BG Andrew D. Preston
Field Artillery School Commandant

Our nation's peer competitors have evolved and sought to limit the advantages we displayed in recent conflicts. They have modernized forces, completely integrated Anti-Access/Area Denial (A2/AD) systems, developed fifth-generation aircraft and weaponry, and are developing their own long-range precision and hypersonic capabilities. They can increasingly synchronize, integrate, and direct operations and other elements of power to create lethal and nonlethal effects with greater sophistication that are less constrained by geographic, functional, legal, or phasing boundaries. It is vital we are able to compete and win, whether we are competing in the largely maritime environments of the Pacific or the land-mass of Europe. Fielding an array of long-range Fires capabilities is essential in an era of great-power competition.

During previous periods of great-power competition, U.S. Army efforts have focused, and relied, largely on the idea that advanced fighter and bomber aircraft would penetrate and disintegrate enemy A2/AD networks to enable maneuver to gain a foothold. Competitors have identified this gap and made significant strides to deny our ability to rely heavily on an airpower solution. Emerging challenges include attacks in cyberspace and the electromagnetic spectrum, adversary information activities, and proliferation of adversary A2/AD capabilities with greater range and mobility. Anti-access capabilities, usually long-range, prevent or inhibit an advancing force from entering an operational area. In order to overcome the competitor's strengths in this modern environment, we must integrate Joint and multinational capabilities with a focus on creating complementary and reinforcing effects with capabilities from multiple domains.

The Field Artillery has a major role in this effort. We must use Army long-range Fires to assist in the penetration and

disintegration of enemy A2/AD systems to create windows of opportunity for exploitation by the Joint force. We will plug into the Joint force through increased capability using a Theater Fires Command or Theater Fires Element to conduct deliberate planning, coordination, and employment of theater Fires while providing capacity to reinforce Joint targeting in support of land and maritime component targets. Development of long-range precision Fires systems, such as the Long-Range Hypersonic Weapon, Mid-Range Capability, the Precision Strike Missile, and the Extended Range Cannon will close range gaps while providing multiple ground-based solutions for the Combatant Commander, Theater Armies, Joint Force Land Component Commanders, and Multi-Domain Task Forces (MDTFs). Army MDTFs with subordinate Long-Range Fires Battalions will synchronize and employ these, as well as non-lethal, systems to enable penetration, exploitation, and disintegration of A2AD threats to enable Joint Force maneuver.

The deep fight will shape the close fight. We must, through modernization efforts and Field Artillery Programs of Instruction in our schoolhouse, ensure the infantry, armor, or scouts face a heavily degraded, demoralized, and disorganized enemy. We will accomplish this through a combination of increased lethality and range at echelon combined with Redlegs who understand how to develop and execute a Fire Support Plan. Collectively, these capabilities will allow us to optimize echelonment of Fires across the breadth and depth of our battlespace. Our ultimate goal is to give our fighting men and women every strategic, operational, and tactical level-advantage in the multi-domain battlefields of the future so they can compete and win in LSCO.

Thank you for your contribution to maintaining our status as the world's premier Field Artillery force.

King of Battle!

Weapons of the Field Artillery, top to bottom:
M119A3 105 mm light towed Howitzer
M270A1 (MLRS) Multiple Launch Rocket System
M777A2 (Triple-7) 155 mm medium towed Howitzer
M109A7 (Paladin) 155 mm self-propelled Howitzer
M142 (HIMARS) High Mobility Rocket Artillery System
Photo credits: U.S. Army

CSM Michael J. McMurdy
Command Sergeant Major
of the Field Artillery

Redlegs,

It has been an exciting start to this new calendar year, especially for our enlisted Soldiers! Thanks to leaders prioritizing our non-commissioned officer Primary Military Education (PME) and your personal readiness to attend when scheduled, our branch had a minimal impact in January with the release of the Army Temporary Promotion Policy. Leader and individual focus on maintaining readiness will be critical moving forward to avoid creating a PME backlog.

- The American Council of Education reviewed our CMF13 PME portfolio for Compo 1 (Active Army) and Compo 2 (Army National Guard) Field Artillery Soldiers. Thanks to our revamped curriculum and increased academic rigor, our NCOs across the branch can now receive a total of 131 new civilian education hours (cumulative across all five Military Occupational Specialties and the Advanced Leaders Course/Senior Leaders Course). These credits are available for our NCOs to request and to be reviewed by their chosen educational institutions listed in the online military guide beginning December 2021.

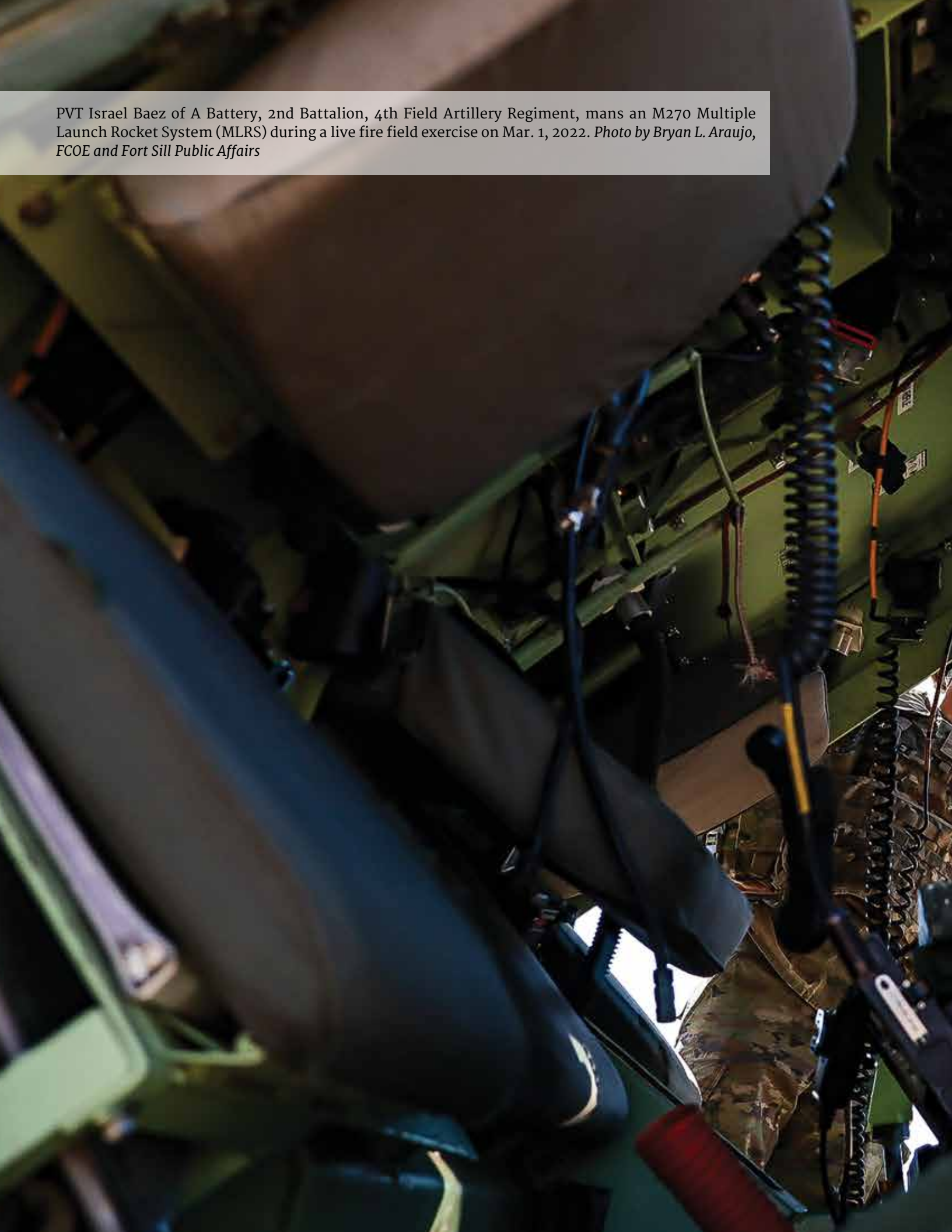
- In Accordance With Military Personnel Message 19-144, the Commandant of the U.S Army Field Artillery School retroactively awarded the Master Gunner Identification Badge to 13F NCOs who successfully completed the Field Artillery Master Gunner Course beginning 2015 in a onetime blanket Memorandum for Record. Future 13F and 13R graduates will receive orders at graduation beginning with our Feb. 28, 2022, course. To request Field Artillery Master Gunner Identification Badge orders, contact the Field Artillery Master Gunner Division at christopher.d.praino.mil@army.mil (primary) or clinton.j.davis14.mil@army.mil (alternate).

- Post FY22 SFC Evaluation Board Analysis. Our Enlisted Personnel Management Directorate team did a great job and provided some additional analysis to help inform our NCOs of factors that contributed to obtaining "Most Qualified" distinction. Encourage Leaders and NCOs to review their documents to assist in making informed career decisions: https://www.hrc.army.mil/asset/25665.

- Saint Barbara Enlisted SITREP for 1st Quarter, FY22 is released. Previous editions can be viewed at: https://sill-www.army.mil/USAFAS/stbarbenlisted, or with the QR Code at left.

We are humbled to serve you and our Field Artillery community. We look forward to another year of progress, leader development, and driving change. Guns up and King of Battle!

RL7 CSM Michael J. McMurdy



PVT Israel Baez of A Battery, 2nd Battalion, 4th Field Artillery Regiment, mans an M270 Multiple Launch Rocket System (MLRS) during a live fire field exercise on Mar. 1, 2022. *Photo by Bryan L. Araujo, FCOE and Fort Sill Public Affairs*

Field Artillery
through the eyes of a Cadet Troop Leadership Cadet

By CDT Elisabetta Aversa, CDT Henry Jensen, and CDT Kendall Elms

If the Army ages its Soldiers, then the youthful, somewhat naive perspective of a cadet under the Cadet Troop Leadership (CTLT) program is a rarity. Upon stepping foot on Fort Sill, we, a small group of Reserve Officer Training Corps (ROTC) and West Point cadets, began shadowing our respective lieutenants in the 2nd Battalion, 4th Field Artillery Regiment (2-4th FAR). We were startled at the expertise and maturity shown by the officers whose roles we would fill in only a year or two. As fully-fledged platoon leaders, they were immersed in the culture of the unit and the intricacies of planning, maintenance, and supervision. Over three weeks, we followed them everywhere—conducting Preventative Maintenance Checks and Services of vehicles, attending morning physical training, and riding in the Multiple Launch Rocket Systems (MLRS). Yet, the difference in understanding and perspective was glaring. As cadets, the world of Field Artillery (FA) lay new and complicated before us. Despite this difference in knowledge, the challenge that the gap in understanding and maturity posed to us was refreshing rather than unnerving. The unit energy, importance of FA, and the prospect of FA Officer positions guided our CTLT experience to only encourage us to branch FA.

Unit Energy

Between the refined West Point environment and the civilian-military duality of ROTC, none of the cadets were well-versed in active-duty, enlisted Army culture—much less the high-spirits and motivation with which 2-4th FAR navigated their tasks. We were pleasantly surprised to find a unit that cared about their job and fellow Soldiers. We soon discovered that the branch culture of FA differed from the other combat arms branches we previously interacted with. Instead of a cutthroat, rugged

Sidebar: U.S. Army photo by SGT Henry Villarama, 173rd Airborne Brigade. Above: CDT Elisabetta Aversa (USMA) utilizes her PVS-14 night vision device to survey platoon night operations conducted at Fort Sill, Oklahoma. Cadets attached to Alpha Battery, 2nd Battalion 4th Field Artillery, had the opportunity to observe MLRS platoon-level training, including Troop Leading Procedures, Convoy Briefs, and Night Drivers Training.

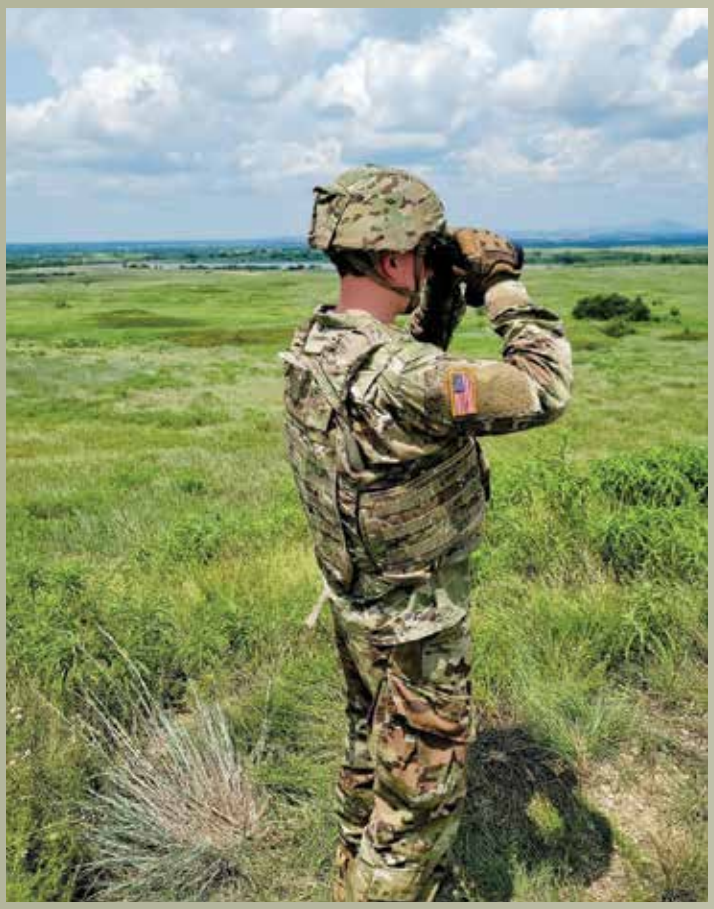
environment, we observed a culture that lifted Soldiers and empowered them to be effective team members. Instances like mandatory personal point-of-contact worksheets, command climate surveys, and interpersonal exchanges between Soldiers proved that the Army truly is a people-first business. Knowing the culture of FA is motivating, high-speed, and high intensity makes the prospect of leading FA units more exciting.

King of Battle

Observing the FA branch units under field conditions presented a different appeal—weapons systems. On the gun line and downrange, we observed the capabilities of artillery cannons and rocket systems and their effects, all conducted at high speeds and even higher levels of efficiency by their operators. The Fire Direction Center and weapon system operators worked in perfect harmony to showcase the strength of the FA to destroy the enemy. The situation of modern combat presents itself as a combined-arms fight, and the addition of artillery to small-unit tactics and light units creates a deadly force—our time sending rounds downrange and calling for fire verified that. Between both rocket and cannon missions, the unique benefits of each weapon system reinforced the value of a combined-arms fight with varied FA weapons. We learned the MLRS unit's mission differs from the cannon units by their significant importance at the Division and Corps-level fight: the strategic door kickers of the Army. Ultimately, both asset types are needed to help support maneuver forces that dominate the battlefield.

Officer Life

The prospects of becoming an officer, while already positive, are bolstered when considering joining the FA team. In addition to the typical platoon leadership time, we learned the FA branch is invested in developing well-rounded lieutenants



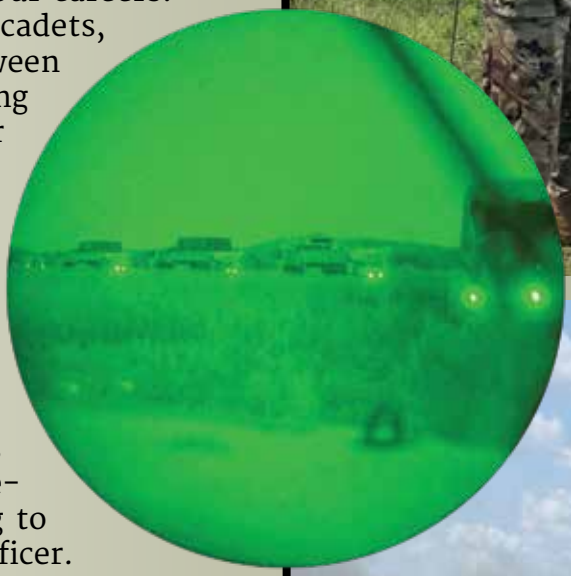
CDT Henry Jenson (USMA) participates in an observed fire exercise at Observation Post Arbuckle on Fort Sill, Oklahoma. The cadets received a rare opportunity to not only observe Field Artillery Basic Officer Leader Course Lieutenants conduct a Call for Fire but were able to assist in spotting indirect rounds and use a Lightweight Laser Designator Rangefinder to acquire targeting data.

CDT Kendall Elms (ROTC) loads a 105 mm round for 2nd Battalion, 2nd Field Artillery at Firing Point 103 on Fort Sill, Oklahoma. Though assigned to 2nd Battalion, 4th Field Artillery (MLRS), cadets received exposure to cannon operations and helped participate in their live-fire exercise.

by placing them in Fire Support Officer or Fire Direction Officer positions. By occupying each position, the goal is to gain experiences to improve our artillery-related skills and ability to fulfill later roles and responsibilities successfully. Thus, the precious early years of officer life are more varied and valuable.

Conclusion

Our experiences as CTLT cadets filled a critical window of time in our lives—young, impressionable, and still developing many of the skills necessary to work as an acting lieutenant. The FA showcased what a positive officer example should be. The varied aspects of unit energy and cohesion, mission-oriented weapons systems, and officership within the FA branch influenced us to pursue the branch for our careers. Through our observations as cadets, we know what to work on between our cadet time and commissioning to match the expectation of our prospective units. Though our futures direct us toward the career of a seasoned, well-versed officer on the beaten path of experience, our lack of understanding and impressionability creates FA to be an untraveled path entirely new to us. With this in mind, CTLT gave us an eye-opening experience, working to meet a future career as a FA Officer.



CDT Elisabetta Aversa is from Cornwall, New York, and is currently in her junior year at the United States Military Academy, West Point, New York. She is currently studying Chinese and intends to branch into the Air Defense Artillery.

CDT Henry Jensen is from Dakota Dunes, South Dakota, and is currently in his junior year at the United States Military Academy, West Point, New York. He is currently studying Engineering Management and intends to branch into the Field Artillery.

CDT Kendall Elms is from Indianapolis, Indiana, and is currently a senior at Maranatha Baptist University, Watertown, Wisconsin, the Badger ROTC Battalion. He is a Business major and has already branched Field Artillery.

Cadets participate in platoon night operations and cannon and live-fire exercises conducted at Fort Sill, Oklahoma.


"TODAY'S ARMY IS MUCH LESS ABOUT THE KNOWLEDGE YOU HAVE, SO MUCH AS THE KNOWLEDGE YOU CAN SHARE."
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Train to Outthink, Outmaneuver, and Outfight the Enemy

By 1LT Hyun Jun Chang

What kind of enemy does the U.S. have?

- A near-peer adversary with capabilities similar to or better than ours.
- An enemy who wants to win as bad as we do, with an untethered opposing, hostile and independent will.
- An enemy who learns and adapts to how we fight.
- An enemy who needs to be "hunted" through reconnaissance.
- An enemy who cannot be predicted.

Above are some descriptions of the enemy we are likely to face in future conflicts. But do we train to fight and win against such an enemy? No. Instead, in most of our training, we fight an Opposing Force (OPFOR), a role player who is often scripted and told to act a certain way In Order To (IOT) enable the Training Unit (TU) to achieve a training objective. Our missions are usually terrain-focused – to seize key terrain – with an enemy that is either on the objective or inbound. But terrain doesn't move or think. Is there a better way to train? Yes. Free-play Force-On-Force (FoF) exercise, where each side is precisely the enemy described above. It is the superior way to train, and how we should train every time. It trains a unit to "outthink, outmaneuver, and outfight the enemy" instead of "pursuing perfection in method rather than obtaining decisive results."[1, 2]

Free-play Training is not Something New

Free-play exercise isn't a novel concept. In his book *4th Generation Warfare Handbook*, William Lind describes that free-play is the "best training" and that it "must constitute the bulk of the curriculum" for officers in preparation for war.[3] He also says that "most training should be FoF free-play because only free-play approximates the disorder of combat."[4]

Free-play training isn't just a concept that resides in books, and it isn't new. In 1941, during preparation for World War II, the U.S. Army conducted the Louisiana Maneuvers, FoF exercises that involved around 400,000 Soldiers over 3,400 square miles. And some of the officers present later became very influential generals such as Omar Bradley, Mark Clark, Dwight D. Eisenhower, Walter Krueger, Samuel E. Anderson, Lesley J. McNair, Joseph Stilwell, and George Patton.[5]

So free-play isn't something new, and we have trained this way before. But why did we stop? Contemplating why we don't train this way anymore isn't the purpose of this article. Such an endeavor would be too extensive and would only lead to a depressing and disappointing conclusion of how not training that way anymore doesn't make sense.

Instead, this article aims to show you how effective free-play training is, based on an actual free-play FoF exercise, called Rifle Focus, conducted in 2021 by a Stryker Infantry Battalion Task Force (TF). From the planning phase of the exercise, it was bluntly obvious how the concept of free-play exercise became so foreign to the U.S. Army – when seeking support, it was met with higher institutional reluctance and skepticism. Despite the lack of external support, the TF Commander, LTC Craig A. Broyles, had the vision

1 Headquarters, Department of the Army. ATP 3-21.8, *Infantry Platoon and Squad*. Washington, DC: 23 August 2016.
2 Leonhard, R. R. (1994). *The Art of Maneuver: Maneuver-Warfare Theory and Airland Battle*. Presidio.
3 Lind, W. S., & Thiele, G. A. (2015). *4Th generation warfare handbook*. Castalia House.
4 Ibid., 75.
5 Wikipedia contributors. (2021, September 2). Louisiana Maneuvers. In Wikipedia, The Free Encyclopedia. Retrieved 16:30, October 30, 2021, from https://en.wikipedia.org/w/index.php?title=Louisiana_Maneuvers&oldid=1042011463.

and determination to provide Soldiers with the best training possible. He enabled the TF staff to plan, prepare, and facilitate a true free-play FoF exercise, where company teams entered an arena to fight one another in a competitive environment. What was the result? According to CPT Trey A. Botten, a Company Commander who participated in the exercise, it "was the most effective training ever experienced."

Everyone should train like this, but no one does. This article will explain how we did it.

What is Rifle Focus?

Rifle Focus was a 15-day free-play FoF exercise conducted in 2021 by TF Dark Rifles from the Washington Army National Guard during its deployment to Poland as the framework nation for North Atlantic Treaty Organization (NATO) Battle Group Poland (BG-P). Why the name "Focus"? We focused on training BG-P's mission essential tasks: expeditionary deployment operations, such as Alert/Marshal/Deploy (A/M/D), area security and defense, and attack. The special focus was on interoperability, "our ability to integrate and operate in a NATO environment alongside our allies."[6]

Each of the three rifle companies formed a company team, and they fought one another in a competitive environment. Company teams included all elements of the BG-P, including M1128 Mobile Gun System (MGS) and M1134 Anti-Tank Guided Missile (ATGM) Vehicle Strykers, a Field Artillery platoon, Romanian Gepard Short-Range Air Defense Platoon, Croatian Multiple Rocket Launchers, U.S. Combat Engineers, and Polish Combat Engineers. Our allies were eager to be a part of this competitive FoF exercise.

The 15-day exercise consisted of three, five-day rotations. The first two days of each rotation were Reception, Staging, Onward-Movement, and Integration, and later three days of "being in the box." Each company team was in the box for all three rotations, two as a TU and one as an Observer, Coach or Trainer (OCT) team.

Each 3-day rotation "in the box" consisted of three battle periods (BPs): (1) A/M/D and receipt of the mission; (2) meeting engagement; and (3) defend/attack to destroy. In the first BP, each company team received an alert from the BG-P Headquarters to deploy into the Tactical Assembly Area, upload their ammunition, and establish a defensive posture. Then they received their order to destroy the enemy. Once each team received the mission, the second BP began. Each team began the Troop Leading Procedure (TLP) process and executed their mission to destroy the other team. Once the meeting engagement was over, the last BP

Figure 1. Commander's Intent for Rifle Focus

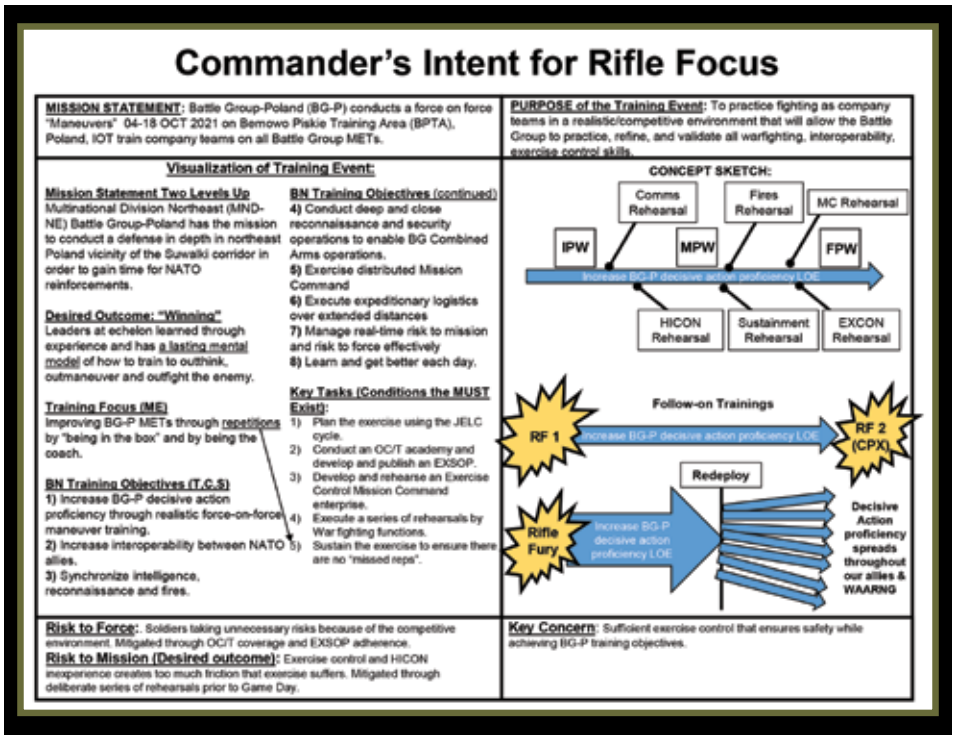

Figure 2. 15-Day Exercise Schedule

Rotation 1					Rotation 2					Rotation 3				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
RSOI		In the Box			AAR / RSOI		In the Box			AAR / RSOI		In the Box		
		C Co vs. B Co					A Co vs. C Co					B Co vs. A Co		
		OC/T: HHC & A Co					OC/T: HHC & B Co					OC/T: HHC & C Co		

6 Dark Rifle 6 Training Guidance, LTC Craig A. Broyles, 2021.

began when both teams received a Fragmentary Order to either defend in the sector to destroy the enemy, or to attack to destroy the enemy.

Since there were no Blue Forces or OPFOR in the exercise, each team was assigned as either the Gold or Black Team. IOT distinguish different teams, each vehicle was marked with gold or black flags on the antenna, and each Soldier wore a gold or black armband.

Each team's leadership, from squad leader and above, had an OCT assigned. IOT minimize artificiality and the number of OCT's vehicles trailing TUs, only six HMMWVs were used for each team, and all OCTs for squad leaders rode inside the Strykers of the squad they coached.

Training without MILES

Rifle Focus was conducted without the use of Multiple Integrated Laser Engagement Systems (MILES). With the experience of being the first battalion TF-sized element to be the primary training audience at the National Training Center, TF Dark Rifles knew how much logistical support is needed to integrate MILES into FoF exercise of such an echelon. Also, given the heavily vegetated terrain where the BG-P was training to fight in, the lasers of MILES simply wouldn't be effective. So instead, BG-P developed extensive Exercise Standard Operating Procedures (EXSOP), which outlined how OCTs were to adjudicate casualties and effects during the exercise.

In the end, exercising the adjudication process was valuable training on its own. IOT adjudicate accurately, each OCT needed to understand the effect of each weapon system to include all indirect fire assets, and how cover, distance, and an element's posture affects the damage done to it.

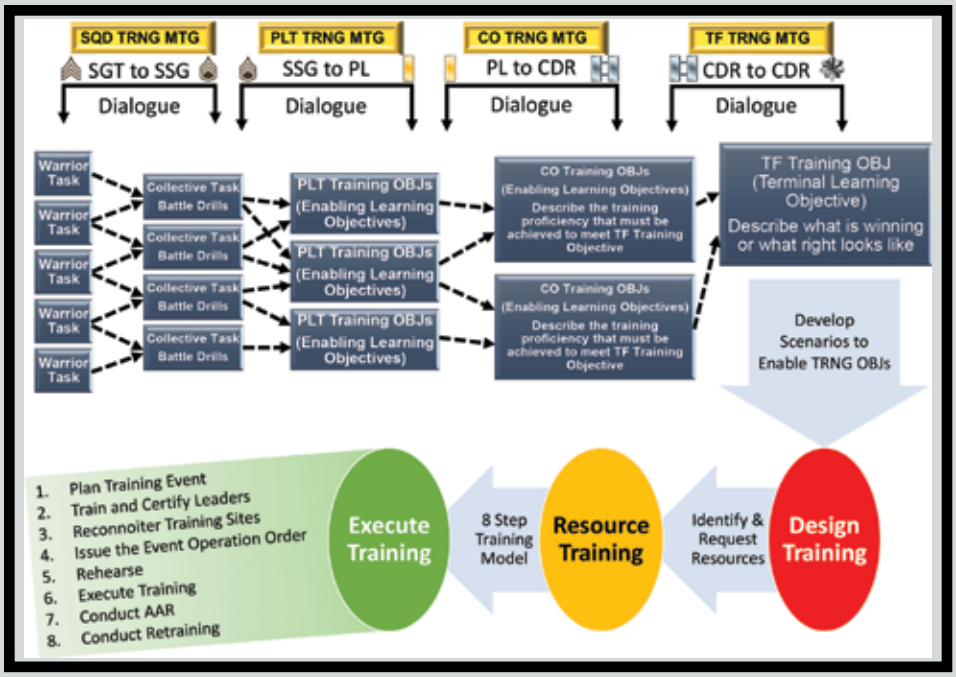

Figure 3. TF DARK RIFLES Training Planning Guidance

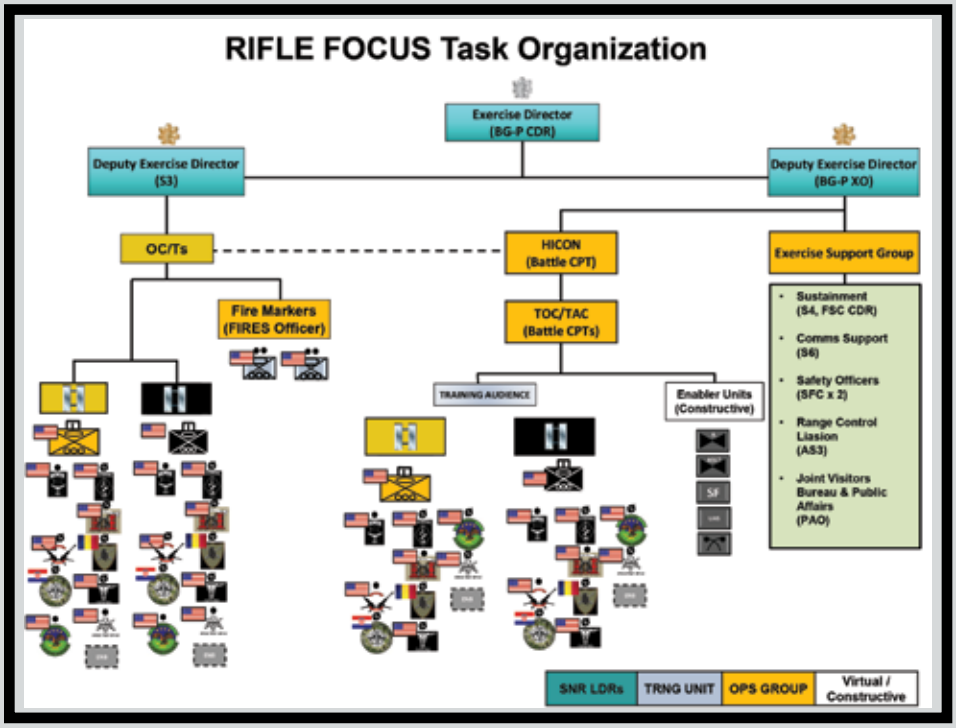

Figure 4. Rifle Focus Task Organization

Rifle Focus Exercise Based on Four Ideas

Rifle Focus was based on four ideas from the following books and articles: (1) competition drives excellence, from the book *Top Dog* by Po Bronson and Ashley Merryman; (2) champions are built by consistently training at

the threshold of failure, from the book *The Talent Code* by Daniel Coyle; (3) only free-play training brings in the central element of war: a free creative will of the opponent, from the book *Maneuver Warfare: An Anthology* by Richard D. Hooker; and (4) you learn the most when you teach others and IOT teach, you must know what you're talking about, from the TIME magazine article *The Protégé Effect* by Annie Murphy Paul.[7, 8, 9, 10]

1. Competition drives excellence[11]

Rifle Focus was designed to bring out the competitiveness in every Company Commander and Soldier. Months prior, we announced that at the end of the 15-day capstone exercise, there could be only one winner. They were to conduct training to accomplish the mission of Rifle Focus, to find and destroy the opponent. This allowed the subordinate units to prioritize training to discover ways to outthink, outmaneuver, and outfight the enemy.[12] Each Commander truly assessed and trained the real needs of their element instead of checking boxes on a to-do training checklist.

During training meetings, each Commander briefed their training plan to prepare their units to be more efficient at fighting the opponent. The entire TF, to include sustainers and staff, were intent on meeting the objectives of the capstone training event, either to fight to destroy the enemy or to enable company teams to do so. The focus was on "obtaining decisive results," not "perfection in the method."[13] The competitive environment not only created effective training plans but created excitement and motivation among the formation.

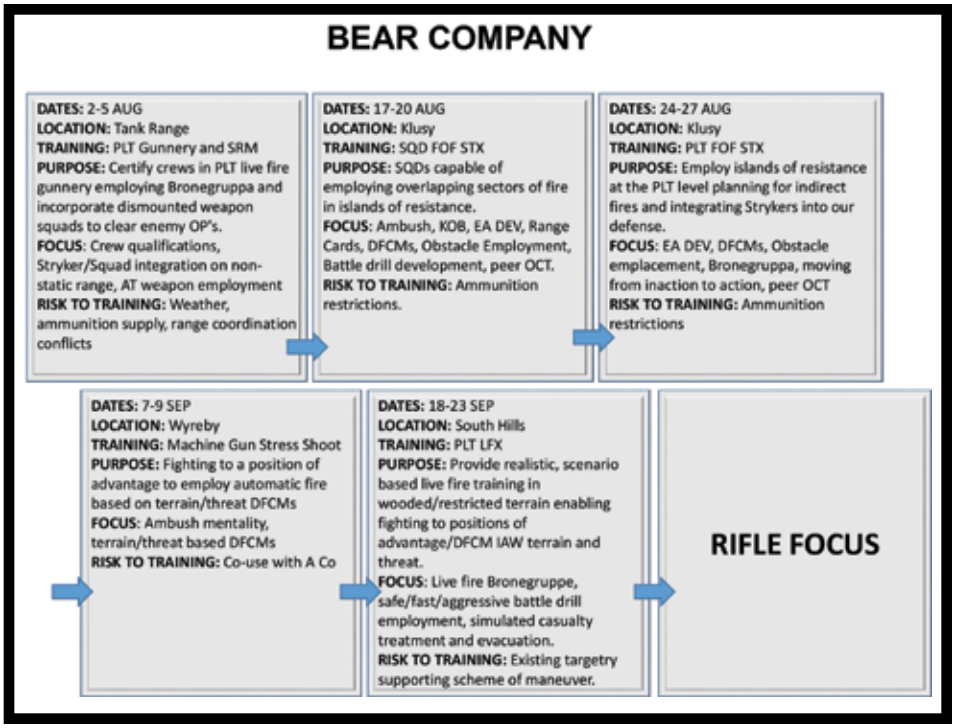

Figure 5. BEAR Company's training plan leading to Rifle Focus

According to CPT Brandon G. Legg, the commander of the Field Artillery battery, at the end of each rotation, his Soldiers were:

"*Discussing how the battle went, often leading to discussions about how one platoon or gun was faster than the others, and how many times one platoon was able to take out the other platoon.*"

Results, not the Process

Rifle Focus incentivized results, not the process. The winner of the 15-day exercise was determined based on who was the most efficient at destroying the enemy. The scoring system was developed to incentivize destroying the High-Payoff Targets that will cripple the enemy, rather than just killing more troops/vehicles – Figure 6 is the scoring matrix. Once personnel/vehicles were killed, the regeneration process began, where personnel killed or vehicles destroyed had to conduct movement to the personnel holding areas, and wait four hours until released back to the exercise.

7 Bronson, P., Merryman, A. (2014). *Top Dog: The Science of Winning and Losing*. Twelve.
8 Coyle D. (2020). *The Talent Code: Greatness isn't born. It's grown*. Random House Business.
9 Hooker, R. D. (1993). *Maneuver warfare: An anthology*. Presidio.
10 Annie Murphy Paul. "The Protégé Effect." Time. Last modified November 30, 2011. https://ideas.time.com/2011/11/30/the-protege-effect/.
11 Bronson, P., Merryman, A. (2014). *Top Dog: The Science of Winning and Losing*. Twelve.
12 Infantry Platoon and Squad, ATP 3-21.8, 12 April 2016.
13 Leonhard, R. R. (1994). *The Art of Maneuver: Maneuver-Warfare Theory and Airland Battle*. Presidio.

Per Vehicle Destroyed		Per Person Killed		Bonus Points	
ICV	+5	Rifleman/Scout	+1	Recon elements detects the other Team first	+5
MCV / RV	+20	Team Leader	+2	Excellence observed by TOP 5 (CDR, CSM, XO, S3, OPS SGM)	+10
Gepard (ADA)	+20	Squad Leader	+5	INTEL Exploitation	+10
CV / LHS / Wrecker	+25	PL or PSG	+10	Trauma Intervention	+10
MGS / ATGM	+25	Co or 1SG	+25	Faster SP out of motor pool	+10
Volcano / M777	+50				
Fueler	+55				

Figure 6. Scoring Criteria for Rifle Focus.

During Rifle Focus, it didn't matter if company teams artfully completed all the correct steps and processes. The only thing that mattered was if they could accomplish the mission to find and destroy the enemy. The Company Commanders and platoon leaders weren't restrained to and graded on a checklist, such as all the correct elements of the TLP process. Instead, as soon as the Commanders received the battalion order, they were free to immediately begin reconnaissance (or not, the choice was theirs), develop and issue an order as extensive or bare as they felt would optimize their chance of winning combat.

2. Training at the Threshold of Failure[14]

Rifle Focus was designed to train the companies at the threshold of failure, by creating a training environment they've never experienced before.[15]

First, all missions during the exercise were based on destroying the enemy. For the first time in their career, the Company Commanders were fighting a real peer threat with the same capabilities as theirs, free-thinking, and with an untethered opposing will. No one knew where the enemy would be or where the battle would occur. Each team had to "hunt" (outthink) the other team using reconnaissance.

Secondly, an additional stress was added by giving Company Commanders troops and equipment in an amount they've never commanded before, increasing "the number of decisions [they] must make".[16] Each company team included its own MGS and ATGM Strykers, a Field Artillery Platoon, Romanian Gepards Short-Range Air Defense, Croatian Multiple Rocket Launchers, a U.S. Long-Range Surveillance Team, U.S. Combat Engineers, and Polish Combat Engineers, with a total of approximately 40 vehicles and 200 Soldiers. IOT efficiently and effectively command his unit, each Commander had to fully exercise mission command, and decide on their own how to do this – what extra responsibilities to entrust to the Executive Officer, 1st Sergeant, Fire Support Officer, and other subordinate leaders, and how autonomous they made their attachments.

That meant each attachment leader had to recommend to the Company Commanders how best to utilize their capabilities and areas of expertise. An example of this was how to properly employ the Remote Anti-Armor Mine System/Area Denial Artillery Munition family of scatterable minefields or FASCAM. The U.S. combat engineer squad leader attached to each company was required to utilize the 17-line Scatterable Minefield Request for proper FASCAM authorization.

14 Coyle D. (2020). *The Talent Code: Greatness isn't born. It's grown*. Random House Business.
15 Ibid., 4.
16 Headquarters, Department of the Army. ADP 5-0, *The Operations Process*. Washington, DC: 31 July 2019.

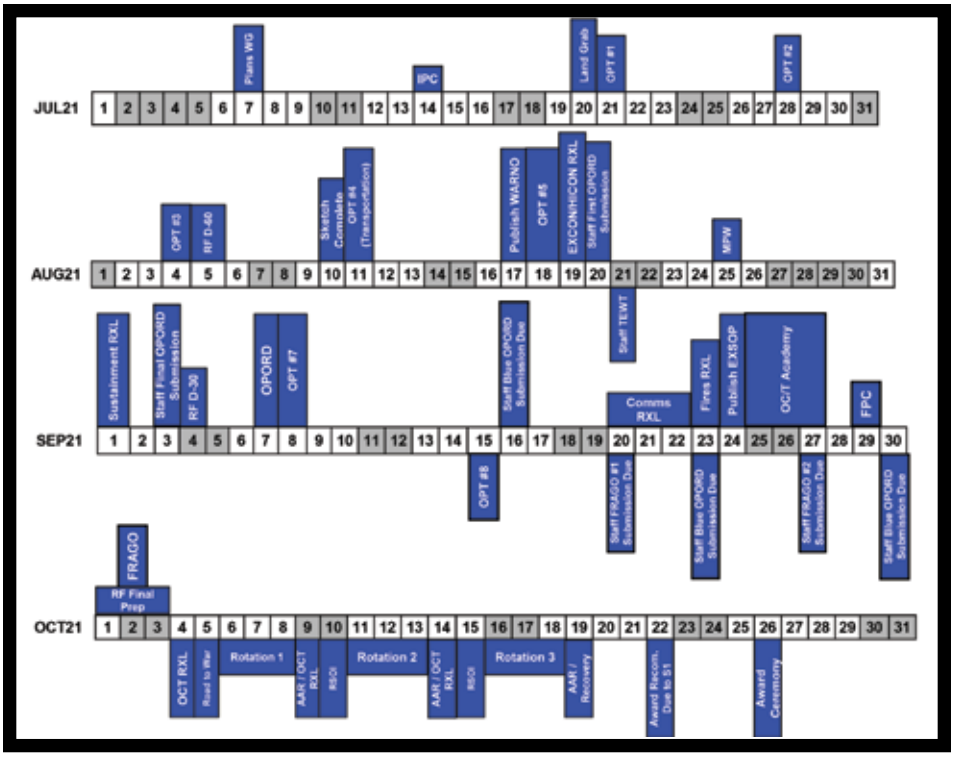

Figure 7. Rifle Focus JELC Timeline.

This typically would be completed by the engineer platoon leader/platoon sergeant in support of the maneuver Commander or coordinated by the TF Engineer. Placing these tasks on the engineer squad leader challenged this leader to perform at a higher level of responsibility, and the maneuver commander, in turn, gained experience in how combat support can shape their scheme of maneuver. Through multiple repetitions of employing FASCAM throughout the exercise, each echelon of leaders gained a better understanding of the planning and coordination necessary for enabler authorizations from higher headquarters.

Lastly, additional mental stress was imposed upon the Commanders by constant pressure to provide reports to paint an accurate picture of the battlefield to the TF Commander. By design, each team wasn't the main effort in their battalion's mission. That meant if they wanted to request battalion's assets, such as an Unmanned Aerial Vehicle from the Polish unit that volunteered to join the exercise or constructive Close Air Support from the Joint Terminal Attack Controllers, each commander had to articulate to the TF Commander through accurate reports why he should grant them additional assets in support of the battalion mission.

Staffing Two Battalions with One Battalion Staff

The idea of training at the threshold of failure was equally true for the staff. IOT make the exercise work, every staff section had to solve for "yes" with a great attitude, usually resorting to a new and creative idea that hadn't been tried before. The exercise was planned using the Joint Exercise Life Cycle, and the staff officers were taught and coached by the TF Commander about the process.

During the planning and preparation process, the staff created two different battalion orders, two Road to War/Warning Order/Operation Order/Fragmentary Order briefs, and task-organized to be able to battle track and support two teams. Sometimes a single person had to wear two hats, to be the S2, S4, or S6 for both the Gold and Black team. Upon rigorous assessment by appointed safety officers, an exercise map was created with battalion checkpoints and phase lines, and the S2 created a world for company teams to fight in. To eliminate as much artificiality as possible, all boundaries and restricted areas had to make sense – labeled as the Area of Operation (AO) for adjacent units, enemy minefields, etc. Due to the safety measures and coordination in place, a 15-day exercise was conducted without any serious injuries or accidents. There were real-life vehicle recovery situations, but they all added to the training value by providing opportunities to utilize all recovery assets/personnel and the stress placed on the command teams in coordinating recovery during combat.

Facilitating the exercise required creativity, especially from the S6 section. They engineered the Joint Battle Command-Platform (JBC-P) system so each team could not see the other teams' locations on their JBC-P. The Tactical Operations Center and Tactical Air Control (TAC) had to monitor and receive reports from both teams with one set of battalion equipment. IOT make this happen, the S6 shop instrumentally used parts from the command post platform

vehicles to establish two separate command post systems. They supported both TUs with one RETRANS team, as well as created two communication plans. Despite all planning and preparation, once the exercise commenced, S6 had to adapt to unanticipated changes such as thick vegetation of the AO forcing RETRANS to collapse inwards to support the vastly limited range of very high-frequency communications. When one TU's communication plan was acquired by the other team, S6 had to quickly create another one (although the exercise director rewarded capturing intelligence by awarding points and allowing the capturing unit to exploit the other side's communication card for several hours). Overall, the unpredictable nature of the free-play FoF exercise created abundant opportunities for the staff to solve problems under pressure.

3. Fighting a Free Thinking Enemy[17]

Every effort was made to make this a true free-play exercise. Other than safety measures in place to ensure the exercise could be executed safely, everything was in play. Companies were given their constraints and restraints during the orders brief and were allowed to use their creativity to find and destroy the enemy.

Executing a true free-play exercise had many unique characteristics, one being TUs experiencing the difficulty of finding an intelligent, moving enemy that is trying to avoid detection in a massive, heavily forested training area. Since there was no OPFOR who was alerted of the approaching TU, sometimes TUs circled each other or fought a ghost enemy they assessed to be at a certain area – which would be realistic when fighting a real enemy. In such cases, the exercise director played a delicate role in keeping the momentum going. As an example, once TUs spent enough time being pressed by the TAC to determine the enemy's location and intent, the TF Commander would occasionally inject enablers. The enablers provided intelligence to the TU with better reports of assessed enemy's commander's intent. Or, sometimes, the TF Commander shifted the main effort to a TU and set a "no later than" time to attack across a phase line, forcing a decision in combat.

4. Teachers Learn the Most[18]

Lastly, Rifle Focus was based on the idea that you learn the most when teaching others.[19] The rotations were intentionally built to allow every company an opportunity to become the OCT.

All leaders knew they had to train and coach by the rules, so leaders at all levels intently studied the EXSOP. And to everyone's surprise, the idea that OCTs are hated proved untrue as all OCTs did their best to coach and facilitate the exercise, and the TUs cooperated, each knowing their turn to trade places was coming. Since everyone knew they had to be OCTs at some point, leaders showed respect and professionalism towards their peer OCTs.

The effectiveness of OCT teams was made possible by the three-day OCT academy conducted with the full participation of all team leaders and above. All leaders were on the same understanding that there might be a lot of friction points, but we're going to figure it out. And this was required of all peer OCTs: to be a fair and impartial professional.

The Result

Rifle Focus accomplished precisely the training objectives of the exercise: to become better at outthinking, outmaneuvering, and outfighting the enemy. As the exercise unfolded, each company team learned to be better at incorporating fire and maneuver, using reconnaissance to find the enemy then using indirect fire assets to attack the enemy's critical vulnerabilities. IOT accomplish this; company teams drastically increased their emphasis on finding the enemy. They fully utilized infantry to conduct reconnaissance missions and called for fire. During the exercise, more than 150 fire missions were processed, and this also fully exercised the logistics assets by creating the need for a logistics package and caches.

Company teams learned the importance of operating

17 Hooker, R. D. (1993). *Maneuver warfare: An anthology*. Presidio.
18 Annie Murphy Paul. "The Protégé Effect." Time. Last modified November 30, 2011. https://ideas.time.com/2011/11/30/the-protege-effect/.
19 Ibid.

dismounted and conducting anti-armor ambushes. Dismounted ambushes abounded in later rotations and were the primary way direct fire kills were achieved. In one of the rotations, a platoon sergeant from Cobra Company, SFC Schuyler D. Sampsonjackson, led his platoon dismounted through thick vegetation, found the enemy commander's Stryker, destroyed it using M136 AT4 Light Anti-Tank Weapon and Javelin fire, and then called for fire to mask his exfiltration out of the area – outthinking, outmaneuvering, and outfighting the enemy, beautifully employed.

The Rifle Focus was a true testimony of how free-play FoF exercise is a superior way to train. Every company team experienced exponential growth from their first rotation to the next. They weren't afraid to learn from each other, taking what works and immediately implementing them to improve how they operate. One example is how one company team was able to reduce their time to A/M/D from almost four hours down to 52 minutes in just two days. That required meticulously fine-tuning how they drew all weapons from the arms room, completed communications check, and moved 40+ vehicles and 200+ Soldiers out of the motor pool. That was a true testimony of how our formation is capable of figuring it out to win the race, to outmaneuver the enemy.

The true value of Rifle Focus was the opportunity to genuinely assess our units. Each rotation was the manifestation of how effective our past training was. After each rotation, each unit had an internal After Action Review (AAR) at squad and platoon level and facilitated an AAR at the company team level. During each AAR, the focus was on identifying what we're good at, what we need to train on at each echelon, what it meant for our way forward, and how it should drive our future training based on our self-evaluation. Leaders were focused on how to change the outcome, how to be better at outthinking, outmaneuvering, and outfighting the enemy. The focus was on making ourselves better as an organization, not better at the exercise.

The following is a testimony of CPT Trey A. Botten, the Commander of Bear Company, the winning team of Rifle Focus 2021.

"Rifle Focus was different from other exercises simply because we had the opportunity to be creative. It was the first time in my military career when I was not limited to a lane, a scenario, or left and right limits. I had the opportunity to employ different forms of maneuver at different periods of the battle, exploit when able, retrograde when required, and was only limited by my imagination and combat power. It was a tremendous opportunity to test my strengths and limitation in task organization of enablers and I had the opportunity to think critically about how my opponent would fight, then find a way to beat him.

"This was the most effective training I have ever experienced and I am grateful my company had the opportunity to be a part of it. We gained a better understanding of terrain sense, separating the mundane from the important, building a common operating picture through reporting and mission command systems, and fighting an opponent that wanted to win, just as much as we did. We also had the opportunity to employ decentralized methods to achieve my intent due to limitations of operational timelines and changes of the battle period. This forced me to move away from the traditional TLP process and get back to 3-0 tactics in finding the enemy, identifying the opponent's intent, developing and executing a course of action as opposed to going into the fight with a well-refined, well-rehearsed plan. As a commanding officer, I very much observed that I was the training audience and was tested in every capability- training at the threshold of failure. The competitive atmosphere encouraged us to take the training seriously and give every ounce of effort at every echelon to win. I did everything I could to determine the opponent's course of action, develop a plan to beat him, and then impose a creative will against him. It was awesome."

Conclusion

Contrary to all doubts, once the exercise commenced, the entire BG-P began operating as a single unit, engaging and utilizing every part of the machine. It required flexibility at all echelons, from the rifleman to staff and up to the TF Commander. Leaders at all levels learned to adapt and figured it out to keep going and accomplish the mission.

Rifle Focus created precisely what William Lind described as the ideal training to produce adaptive leaders, placing leaders in "difficult, unexpected situations, then require them to make decisions and take action under pressure."[20] Above all, it created and engraved in future leaders a mental model of what effective training should look like: a free-play FoF exercise. Once you experience it, you won't want to go back to Situational Training Exercise lanes. Everyone should train like this.

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20 Lind, W. S., & Thiele, G. A. (2015). *4th generation warfare handbook*. Castalia House.

OUTLAWS OUTSIDE:

One Battery's Method *to* WIN *at the* Point *of* Contact

By LTC Keith R. Williams and CPT Phillip J. Herold

On August 13, 2020, GEN Michael X. Garrett, the Commanding General for the United States Army Forces Command, published an article titled *Winning at the Point of Contact.* The article briefly discussed GEN Garrett's new training strategy for the Army, known as the Foundational Training Strategy. This new direction emphasizes repetitions and sets of training at the individual, section/squad, and platoon levels. "Regardless of the location or mission, the Soldiers in our crews, squads, and platoons will be the first to make contact with the enemy, and it is at that point they must decisively prevail" (Garrett, *Winning at the Point of Contact*). The Foundational Training Strategy isn't revolutionary, and as a commander of a Multiple Launch Rocket System (MLRS) Battery (BTRY), neither is mine. However, simply reserving land, empowering subordinate leaders, and accepting training can be piecemealed enables the *Outlaws* of Alpha BTRY, 2nd Battalion, 4th Field Artillery Regiment (2-4th FAR), 75th Field Artillery Brigade to win at the point of contact.

Outlaws Outside is the initiative implemented in Alpha BTRY 2-4th FAR. It is simple; look at the calendar, identify dates to reserve land, conduct troop leading procedures, execute, and assess. Some of the most common remarks I've heard over 10 years of service is "we just need time to train," or "if only we could get some land and just train like this all the time." Outlaws Outside seek to remove the excuses from the training equation. After getting feedback from all of my platoon leaders and platoon sergeants, we identified multiple days that spanned over six months where training could be conducted.




Once we had hard dates, we updated the Defense Training Management System (DTMS). We passed them over to the Battalion Ammunition Officer so that every month the following month's dates could have land reserved. Updating DTMS is critical because it provides the grounds and ability to fight for protected training, and it was not something thought of within the last two weeks.

Having land that can support an MLRS BTRY's operations is crucial to becoming proficient at the section and platoon levels; and only so much Digital Sustainment Training (DST) and fire mission processing that can be conducted in the motor pool. In addition, MLRS units need an area to plan tactical movements, reconnaissance, selection, and occupation of a position. With training areas and dates locked in, the next step in the Outlaws Outside initiative is empowering subordinate leaders to plan and own the training.

Fire Direction Officers typically do not have all the time they need to plan, cooridinate, resource and execute Fire Direction Center training. The majority of our Battery training occurred on Tuesdays for DST, while non-commissioned officers led the way with Sergeant's Time Training on Thursdays. However, I wanted a different standard while I was Commander, so I assigned a different platoon leader and platoon sergeant the responsibility of planning each iteration of Outlaws Outside. The planning started with me giving clear guidance with left and right limits for each training iteration but I left the overall objectives, timelines and tasks to the appointed planners who then provided updates during weekly BTRY training meetings.

What's truly inspiring is the ripple effect that occurs from saying, "here's some land and protected days, go do great things." During the After Action Review (AAR) for the first Outlaws Outside iteration, leaders identified the "next steps" to improve the proficiency of all the platoons. What's even more impressive is everything the 1st Sergeant (1SG) and Commander identified as training improvements the subordinate leaders had already thought to identify. Relying solely on systems, emphasizing reconnaissance and security, rehearsing contingencies, and bringing sensitive items and weapons all came up during the AAR; the 1SG and Commander didn't have to say a thing other than let's make it happen.

Section leaders also began to take the initiative at the first iteration, especially in the support platoon. The Soldiers and leaders in the support platoon took it upon themselves to improve their training and use all their time. They did this by asking themselves, "What else can we do?" Their response was rehearsing the establishment of the Ammunition Holding Area (AHA) until they got it right, but that wasn't enough for them. Next, they decided to rehearse the defense of the AHA and even developed sector sketches, range cards, and simulated opposing forces and civilians moving through their area of operations. Finally, the support platoon coordinated with all MLRS platoons to move through the AHA and rehearse reloading procedures. Allowing platoon leaders and platoon sergeants to own their training instead of dictating it brings you one step closer to winning at the point of contact.





We, as leaders, don't like to piecemeal operations; we prefer to complete them at one time and in one space, as we are constantly competing with time and requirements. But, unfortunately, we also get wrapped up in a "have to have everyone present" mentality only participating in training on the higher echelon's calendar. When conducting training, the *Outlaws* have fought against this epidemic by accepting the concept that we will send who we can for each training event. This method allows a closer look at individual sections/squads, making room for fine-tuning and training to standard, not time. Sections who participate in training then take the lessons learned and pass them on to other Soldiers and leaders. Not only does this improve proficiency, but it encourages better communication between sections and platoons.

Outlaws Outside is a simple initiative that gives ownership of training back to both section and platoon leadership. It analyzes when the next higher echelon training events occur and creates opportunities to prepare beforehand. The Outlaws don't do anything revolutionary; reserving land, empowering subordinate leaders, and accepting the fact training can be piecemealed all leads to winning and winning matters.

LTC Keith Williams was born in Plantation, Florida, and grew up in both Charleston and Summerville, South Carolina. He graduated from Liberty University in 2003 with a bachelor's degree in Psychology and was commissioned in the Field Artillery. LTC Williams has had an exceptional career, completing Airborne and Ranger school and two deployments to Iraq in support of Operation Iraqi Freedom. He also has a master's degree in National Security Affairs from the Naval Postgraduate School, one deployment to the Kingdom of Saudi Arabia, and has held various positions that range from company fire support officer to brigade operations officer. LTC Williams is currently the commander of 2-4th FAR.

CPT Phillip Herold was born in Frankfurt, Germany, and grew up in Virginia Beach, Virginia. He enlisted active duty in January 2008 and was the recipient of a Green to Gold four-year hip-pocket scholarship. He majored in Criminal Justice at Old Dominion University, the Monarch ROTC Battalion, and was commissioned in the Field Artillery in May 2014. CPT Herold is currently the commander of A BTRY, 2-4th FAR.

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Black on Ammunition Green on Forecasting:

Ammunition Lessons learned from a Division Artillery in a Division Warfighter Exercise

By MAJ Mikhail Jackson

In the Army, most people naturally think black on ammo is a bad thing. However, what if black on ammo means you are exactly doing what you need to do to accomplish the mission? There is a consistent debate across the warfighting functions as to what a black status means concerning ammunition. The Division Artillery's (DIVARTY's) Force Field Artillery Headquarters' (FFA HQ) mission defines black on ammo as the inability to support Field Artillery Tasks against the Division Commander's High-Payoff Target List without resupply. For the purpose of this article, that is the definition I will use.

In the sustainment community, most sustainers naturally want to keep a stockpile of all supply commodities on hand for replenishment purposes before units go black and, if at all possible, keep commodities above levels of amber, preferably in the green at all times. Army Regulation (AR) 700-138 *Army Logistics Readiness and Sustainability*, delineates a green status as a unit quantity that is 90 percent or greater (combat capable); amber as 70-89 percent strength (combat capable with minor deficiencies); red as 60-69 percent (combat ineffective, unit has major losses of deficiencies); and black means a unit quantity is less than 50 percent (at grave risk, not supportable). As a sustainer in the 2nd Infantry DIVARTY, I had the unique opportunity to enhance my understanding of the Fires' side of logistics, as well as multiple echelon levels of sustainment.

As the lead sustainer for the DIVARTY in the FFA HQ role, I quickly came to the understanding that ammunition may not always be "green." In fact, sometimes on-hand quantities might be in the red or black, which is okay if you understand mission requirements and can appropriately forecast ammunition and make ammunition adjustments depending on the range of the enemy's location. In our recent Warfighter Exercise (WFX), my sustainment team and I used Class V (ammunition) (CLV) Projected Volume of Fire (VOF) according to the phase of the operation, and accurate forecasting (up to 96 hours out and tied to the targeting cycle), to help drive the Course of Action (COA) in CLV ammunition expenditure success.

Most sustainers view ammunition replenishment and Required Supply Rate (RSR) as a straight-line process. One can define RSR simply as how much CLV ammunition is necessary for an operation. Units determine their munitions requirement and set an RSR to sustain tactical operations for specific periods. A straight-line ammunition process can work in some conditions; however, for artillery in Large-Scale Combat Operations (LSCO), it is more useful to anticipate requirements by phase and anticipated VOF.

Understanding Ammunition by VOF and by Phase of the Operation

Expending rounds against the enemy based on the phase of the operation is an approach that will better describe requirements to ensure mission accomplishment. Figure 1 is a visual representation of how logistics planners view RSR. RSR translates for the duration of an operation, a forecast of ammunition inventory based on a straight line RSR. Figure 2 portrays the recommended approach to view RSR, which is by forecasting inventory over time by phase of the operation. The DIVARTY benefited significantly from this approach during WFX 22-02.

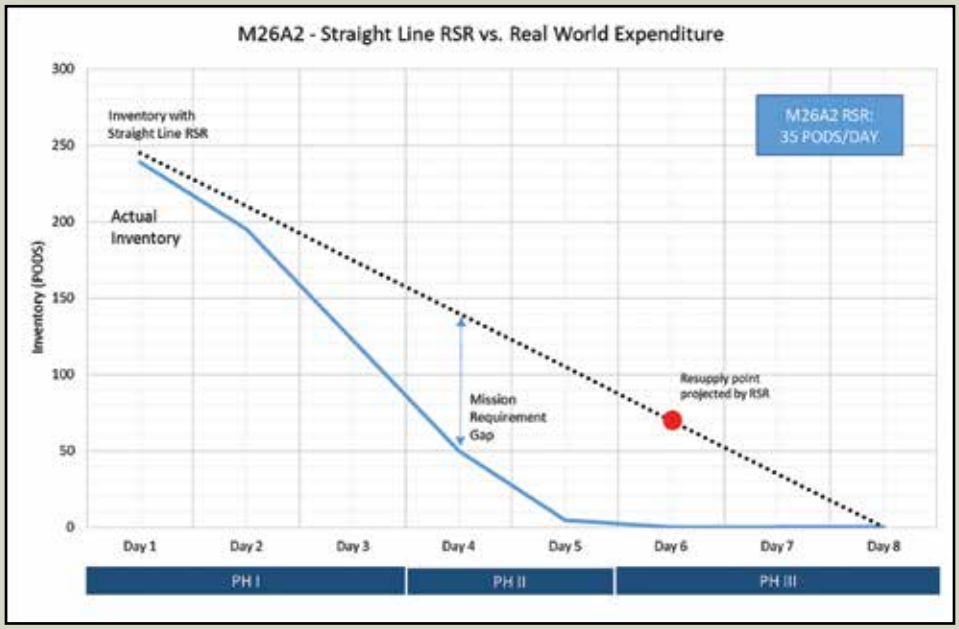

Figure 1.

Projecting RSR by phase of the operation helped us forecast our requirements two days earlier than if we used a straight-line RSR. The difference

between two days in LSCO can be the difference between winning and losing. In our case, it meant when we would need a resupply sooner than expected. Our forecasting helped determine the need for resupply in Phase II of the operation versus Phase III. As shown in Figure 2, our forecasting also helped us shorten our mission requirement gap, illustrating our projected ammunition aligned with our projected ammunition requirements. As a DIVARTY, we could forecast how much ammunition we had at all times, and we knew when we would run low and by how much.

Over time, the pattern of ammunition expenditure and VOF more closely represents a bell curve than a straight-line pattern. A straight-line pattern is deceiving across phases of an operation throughout, because it gives the impression that ammunition requirements will remain steady. In our WFX, that was not the case. Based on projected VOF, the DIVARTY could tell the critical ammunition like M30 Guided Multiple Launch Rocket System (GMLRS) and M26A2 would fluctuate throughout the entire operation. We anticipated we would expend more M30 upfront, then transition to M26A2 in the following phases, as shown in Figure 3. Army Techniques Publication (ATP) 3-09.30 *Observed Fires* specifies that unlike the traditional free flight M26 series rockets, whose accuracy degrades as the range to the target increases, the GMLRS provides consistently improved accuracy from a 15-kilometer minimum range to a maximum range of 70+ kilometers. Thus, the preferred ammunition to shoot is M30 if within range for accuracy and reduction of collateral damage.

What we did not anticipate in the WFX was a Controlled Supply Rate (CSR) imposed on critical ammunition at the sustainment stock level, the source of our ammunition replenishment. This imposed CSR was at an insufficient level to meet our daily requirements. This CSR meant we would go red and black on the critical ammunition

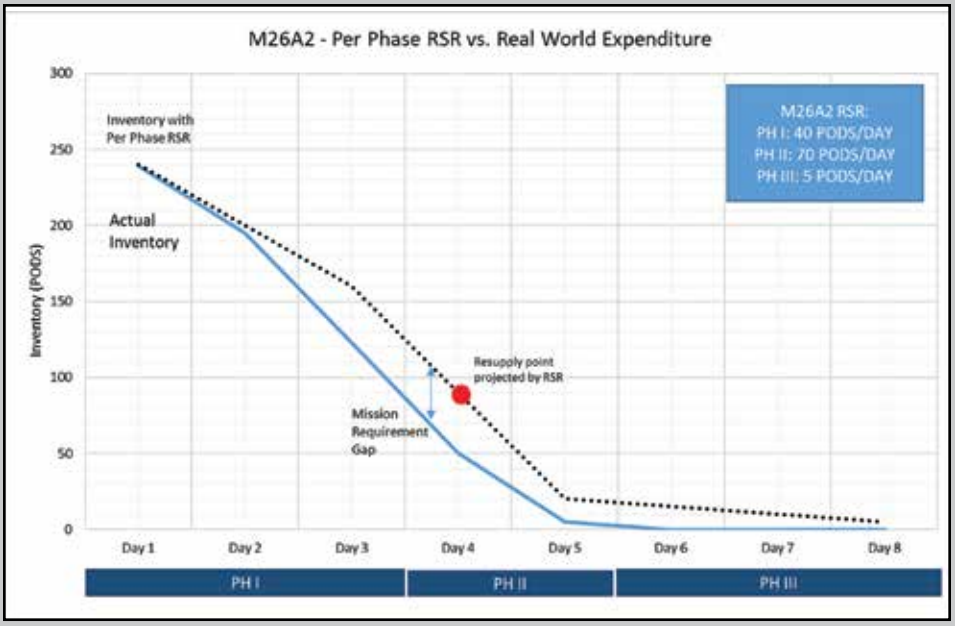

Figure 2.

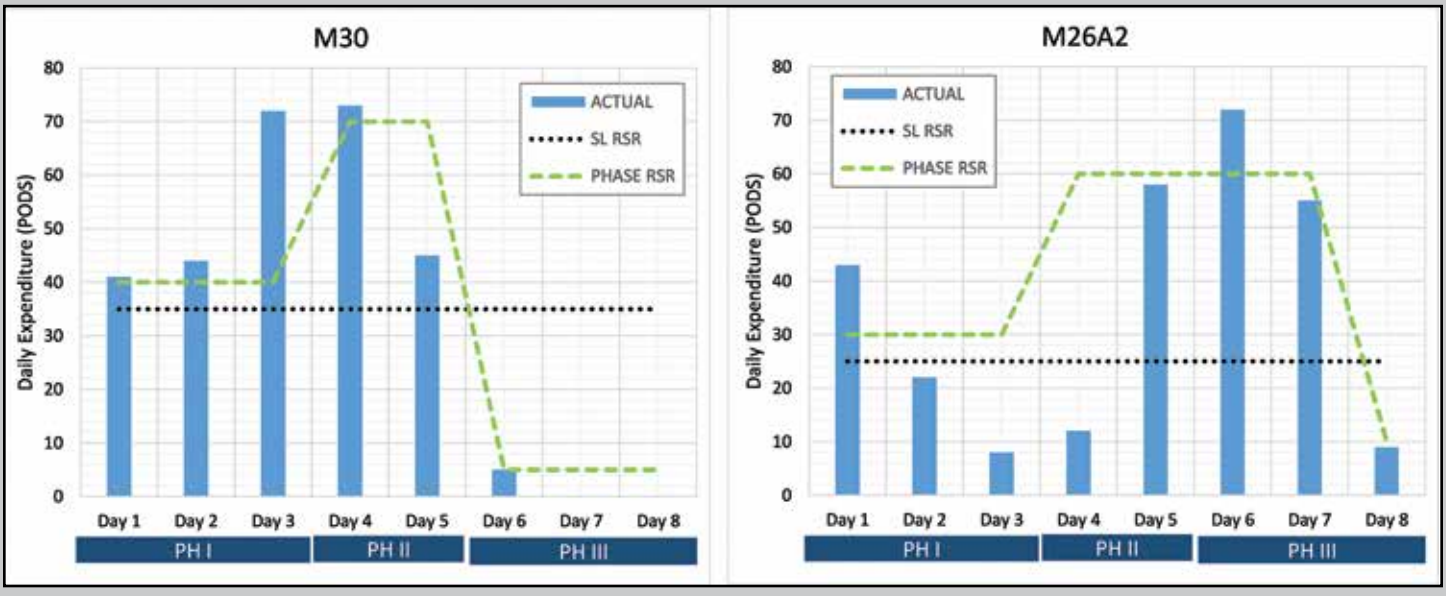

Figure 3.

requirements we needed to support long-range artillery missions. Based on guidance from the Commander on how we planned to fight, we had a reliable estimate for when we would run out of ammunition for each critical requirement. Further, we had a branch plan to allow us to fight using long-range munitions if required. The CSR would increase the risk at a critical portion of the battle that was unacceptable to multiple commanders. The staff's ability to communicate these concerns allowed the risk to remain at an acceptable level.

An FFA's HQ requires efficient communication to get the appropriate information needed between different organizational networks. The DIVARTY gathered information at multiple levels to form an accurate, holistic view and communicate a shared understanding of the process. As a DIVARTY in the role of an FFA HQ, we are in a unique position. We can view sustainment stock and on-hand quantities across multiple units, including the attached or reinforcing Field Artillery Brigade (FAB). The FAB primarily focuses on what they have on-hand at the gunline and their Sustainment Battalion. The Sustainment Brigade primarily focuses on higher echelon sustainment stock. The DIVARTY occupies the space in between. Therefore, we can synthesize the two perspectives to get a more holistic assessment.

As an FFA HQ, one could use VOF and the phase of the operation to drive what forecasted ammunition requirements. The DIVARTY's targeting mission allows a level of predictability to inform the amount of ammunition needed to sustain the battle. This is further informed by integrating ammunition requirements into our planning efforts and branch plans to account for changes to conditions and the type of operation. We determine what type of long-range artillery we will need to use based on targeting requirements for each phase of the operation.

Forecasting Ammunition

For the firing units to meet their maneuver commanders targeting guidance, the FFA HQ must forecast accurately. Accurate forecasting is a critical component of describing ammunition requirements, in addition to the quantity of ammunition requested and consumed by the unit. The Department of Defense Identification Code, quantity, and location usually determine ammunition forecasts. As a DIVARTY, we consistently communicate requirements tied to the targeting cycle. We, therefore, reduce the need for un-forecasted requirements to prevent additional and unnecessary risk for sustainment units.

For the first two phases of WFX, they planned to rely heavily on M30 ammunition. We knew our forecasted replenishment for M30 for Phase I and II would be high. The high consumption of M30 would allow us to remove the High-Payoff Targets that posed the highest risk in these phases. With this risk reduced for Phase III and IV, we could transition our expenditures to another type of ammunition. We based consumption rates on defense, offense, and stability operations. Informed by our anticipated targeting success, we forecasted high for offense and relatively lower expenditures for defense.

Our S2/ S3 High-Value Target analysis drove our forecast analysis based on the required VOF needed to achieve mission success. We also used counterfire analysis and anticipation to determine how much we would need to defend our Division and ourselves. We even further involved ourselves as an S4 section through our attendance in the DIVARTY targeting meeting, which allowed us to anticipate requirements out to 96 hours. Based on forecasted VOF, close coordination with the Fire Control Officer, ammunition expenditure, and the imposed CSR for sustainment stock, we forecasted that we would be in a red or black status on both M30 and M26A2 ammunition by the end of Phase III/ beginning of Phase IV.

We knew we did not have many options, so we quickly made the operational determination that we would not conserve ammunition but rather use what we had of the M30 first for longer-range artillery. Then we would move closer to the enemy for shorter-range M26A2 ammunition to achieve similar effects. Tactically, this meant we had to plan to move closer to the Forward Line of Troops to change ammunition type. We also had another COA to shift to High Explosive M31 instead of M30 in the interim when we ran out of both M30 and M26A2, which required a more accurate target location to achieve the same effect. This shift meant we would be moving from needing a six to eight-digit grid to having a 10-digit grid coordinate, hence a lot more accuracy involved

within the Division's detection efforts.

However, perception from a sustainment metrics perspective stated that we were black on ammunition (less than 50 percent). In the eyes of FFA HQ, we ultimately would not be black on ammunition until we had no ammunition left. This meant sustainment black was our 100 percent, and amber was 75 percent of that, red was less than 50 percent of that, and black for us was no ammo at all. This simple metric helped us accurately estimate when the Division had positioning and risk decisions to make. The FFA HQ communicated these opportunities through multiple working groups and decision boards. These decisions would be made based on the targeting success and the ammunition that remained by phases of the operation. The Division needed to win the battle based on the ammunition type we had left.

An additional challenge we quickly resolved in the initial phase of calculating ammunition requirements was how we received ammunition reporting requirements. The standardized Logistics Status document in which units sent up CLV ammunition requirements had ammunition consolidated into one full rollup versus breaking down how much ammunition consumption each unit expended day by day. As an FFA HQ, our ammunition expenditure strategy calculated ammunition expenditure day by day for an end-of-day individual rocket count. The day-by-day ammunition expenditure count allowed us to communicate accurately how much ammunition the Division expended. Additionally, it allowed us to see how much we could anticipate expending. Finally, it allowed us to know how much ammunition remained based on what artillery type we wanted to use. Planning and accurate forecasting were the essential foundation for using ammunition effectively.

Summary

Our success during the WFX with ammunition depended on clear guidance and staff synchronization. While most organizations tend to find it challenging to fully incorporate sustainment and logistics into combat planning efforts, DIVARTY embraced sustainment as an integral effort to complete the mission successfully. Accurate forecasting (up to 96 hours out and tied to the targeting cycle), and CLV ammunition VOF according to the phase of the operation helped drive the COA in CLV ammunition expenditure success. Though doctrinally, sustainment may classify our category of ammunition metrics as black, as an FFA HQ, the DIVARTY prevailed with unconventional forecasting techniques and thorough ammunition analysis to achieve mission success. Furthermore, we believe our approach to ammunition management and articulation of requirements will assist units throughout the Army in LSCO.

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The 2nd Battalion, 18th Field Artillery staged two M270 Multiple Launch Rocket Systems (MLRS) and a tactical vehicle on Jan. 19, 2022, at the historical Medicine Bluffs on Fort Sill. The unit arranged the photo to emulate a historic and well-known painting of the Fort Sill Field Artillery Half-Section. *Photo by Bryan L. Araujo, FCOE and Fort Sill Public Affairs*


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FINLAND
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Kuressaare
Viljandi
Lake Võrtsjärv
Tartu
Elva
Põlva
Saaremaa
Võru
Irbe Strait
Gulf of Riga
Valga
Pskov
RUSSIA
Valmiera
Ostrov
Vēntspils
Gauja
Sigulda
LATVIA
Kuldīga
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Madona
Jelgava
Daugava
Opochka
Liepāja
Rēzekne
Jēkabpils
Mažeikiai
Daugavpils
Palanga
Klaipėda
Panevėžys
Novopolotsk
LITHUANIA
Utena
Jonava
Neman (Memel)
Neris River
Kaunas
Kaliningrad
Kaliningrad (Russia)
Vilnius
BELARUS
Marijampolė
Alytus
Maladzyechna
POLAND
Suwałki
Lida
Grodno
Minsk
0 50 100 km
0 25 50 75 mi
BALTIC STATES
National Capital
Major Cities
Major Airport
International Boundary
Main Road

Closing the Fires gap:
A Baltic Fires Proposal

By MAJ Daniel Jernigan

Great military minds from Fredrick the Great to General Patton have all given special emphasis to the importance of strong artillery. Today it is no less necessary to maintain a strong Fires capability. Given the strategic shift toward Large-Scale Combat Operations (LSCO), the U.S. Army Field Artillery (FA) must change to meet new stronger threats. The capability gap found in the Fires War Fighting Function is a serious one that will require substantial but necessary enhancements.

The gap highlighted by the assessed Baltic operating environment is associated with Army Directive 2017-24. The directive established a future long-range precision Fires cross-functional team pilot to address the first of the Chief of Staff of the Army's six Army Modernization Priorities.[1] 2018 National Defense Strategy clearly states that "inter-state strategic competition, not terrorism, is now the primary concern."[4] Multiple peer competitors have made considerable advances to their Fires capabilities, but none so intimidating and threatening as Russia.

In 2019, the Rand Corporation conducted a research study highlighting U.S. artillery capability gaps. Their analysis of the "Baltic Scenario" revealed a Russian artillery capability with longer ranges, greater rates of fire, and more numbers than the U.S. can currently employ.[5] In this scenario, it is assumed that Russia would employ a force consisting of 50 to 60 Battalion Tactical Groups (BTGs), all with their own organic Fires elements.[6] They would also employ 15 Fires battalions and an extensive tactical ballistic missile, long-range rocket, and anti-ship missile capability.[7] For this specific scenario, it is assessed that the "main attack" into the Baltics would begin with nine brigades supported by two others.[8] The Rand study outlines a Russian order of battle consisting of 12 battalions of tube artillery, nine battalions of heavy rocket launchers, 24 battalions of medium rocket launchers, and five battalions of short to very short-range ballistic missiles.[9] Each division-sized element will also have an Integrated Fires Command that can and will integrate massive amounts of additional fire support into Division Tactical Groups and BTGs.[10]

CROP: Cannon density of fire, Rocket density of fire, Organize FA BNs to three x nine, and Pre-position FA BNs/equipment strategically

The cross-functional team currently has three focus areas, "Deep Fires, Long-Range Precision Fires Missile, [and] Extended Range Cannon Artillery."[2] These developments are exciting, but the U.S. Army will have to address more than just the range gap, namely, the overmatch of system numbers and the rate of fire. This article proposes that the Army use "Organizational" and "Materiel" solutions to increase the artillery arsenal, increase the rate of fire, and equalize the current Russian Fires overmatch.

Issue: Years of focus on Iraq and Afghanistan have affected the training, equipment priorities, and institutional orientation of the U.S. Army FA branch.[3] Gone are the days, however, when terrorism was central to U.S. National Security and the focus was squarely on counterinsurgency. The

As for the North Atlantic Treaty Organization (NATO) coalition, it would initially consist of forces from the Baltic states plus other NATO forces that would move into place in the expected

"warning period" prior to the beginning of hostilities.[11] The expected artillery strength of this force would be a sparse seven battalions of tube artillery, and three battalions of rocket/missile artillery.[12] The most dangerous phase of this conflict will be the initial period of fighting, the period when Baltic and initial NATO forces are being overwhelmed by Russian forces and NATO is scrambling to send reinforcements into a largely contested battlespace.[13] Russia will most likely encircle Tallinn and Riga and close the Kaliningrad gap to block NATO forces coming from Poland.[14] At this point, with insufficient combat power to push further, they will likely switch to the defense and focus on inflicting massive damage with their incredibly large and advanced Fires capability.[15] In this scenario, with these assessed strengths, there will be unacceptably high losses to NATO forces.[16]

The Baltic scenario initially has mid-range cannon artillery comparisons assessed to be seven to one in Russia's favor.

With systems capabilities and task organizations as they currently are, a Russian cannon artillery battalion (2S19) is collectively capable of a 54–72 rounds per minute (RPM) sustained rate of fire.[17] By contrast, a U.S. cannon artillery battalion is capable of only 18 RPM sustained rate of fire (M777 & M109).[18] As the Rand Corporation study concluded, and with rates of fire applied to the results of the study, the artillery capability gap shows to be much larger. The Baltic scenario initially has mid-range cannon artillery comparisons assessed to be seven to one in Russia's favor.[19] The study assessed NATO forces to initially have seven battalions (BNs), 126 tubes. If these assessments are correct, then Russia will employ approximately 882 tubes.[20] Given the "robust network of Russian air-defense systems," it would be irresponsible to assume that the air force could attrite enemy Fires by any reasonable amount.[21] This leaves the majority of this fight to the Army. The entire NATO force is firing 126 RPM across the entire battlefield while Russia saturates NATO forces with a staggering 2,644 cannon artillery RPM.

Now consider the Multiple Launch Rocket Systems (MLRS) comparison. United States' MLRS systems can fire 12 rockets in less than 40 seconds and can take as much as 10 minutes to reload. The HIMARS system can only fire half that number of rockets because it can only hold one pod (six rockets). The Russian rocket launching counterpart, the BM-21, is a fierce competitor. The Grad (BM-21) can fire 40 rockets in 20 seconds with a seven-minute reload time.[22] Some variants can fire 50 rockets in a similar timeframe.[23] Admittedly, while the Grad system has a much higher rate of fire, they also have a much smaller, 122 mm rocket, as opposed to the 227 mm MLRS rocket.[24] Therefore, a one-for-one comparison will not yield an equal destructive capacity. Still, the Rand study assessed overmatch for rockets at five Russian launchers to every one U.S. system.[25] Russia has 324 more launchers and each launcher can fire more than double the number of rockets in one salvo. The U.S. Army's modernization efforts are addressing the range overmatch, however, it is time to see the gap in terms of quantity and lethality as well.

Possible Approaches: The studies and wargames that have analyzed the Baltic scenario have produced recommendations that essentially boil down to this: More range for rocket and missile systems and the ability to impose more effects faster on the enemy, whether through the development of more systems or by modifying current systems by improving the rate of fire. There is a range of possible approaches across the DOTMLPF-P domains that could contribute to a solution. The Army could use doctrine or training to encourage artillery systems interoperability with NATO partners. While this option may be cheaper than a materiel or organizational solution, there are also substantial questions regarding how much the U.S. can and should rely on NATO allies in an LSCO scenario. Further, the hope that NATO military partnerships can improve in the future, isn't promising either. The forward presence of U.S. forces, training or operating with allies is a critical means of interoperability, however, the end of the International Security Assistance

Force mission in Afghanistan will bring with it the end of "the alliance's workshop for building and maintaining interoperability across a range of military operations."[26]

Materiel or organizational approaches may be the only options that offer a tangible solution in which the U.S. could remain independently confident of success in the Baltics. This approach could mean developing a new artillery system that has range and rate of fire improvements sufficient to close the capability gap, a solution known as the big "M."[27] The little "m" solution is another possibility, which would not develop a new system, but rather increase quantities of artillery systems or modify existing systems with improved range and rate of fire. If either of these options is chosen, then admittedly, there will be significant second/third-order effects. Solutions analysis would need to be conducted to assess strategic responsiveness, feasibility, and realizability, to determine a reasonably well researched recommended solution.[28]

Recommended Solution: Given current national strategic guidance, the Army must make materiel (little "m") and organizational changes to solve this capability gap. My recommended solution is fourfold. First, create a rocket munition that is a smaller version of the M26 rocket and a 25-rocket capacity pod that fits MLRS and HIMARS systems. Second, increase the rate of fire in U.S. cannon systems from one RPM to six-10 RPM by prioritizing and perfecting the autoloader technology that is now only a prototype.[29] Third, task organize cannon artillery battalions to make a three x nine configuration (similar to the updated MLRS configuration). Lastly, more artillery battalions will have to be postured to be able to effectively react within the expected "warning period." My assessment is that an additional five cannon artillery battalions and an additional 12 MLRS battalions will be required. If the Baltic scenario plays out, then this will provide commanders with a cannon and rocket density of fire that matches that of the Russians and better combats the Iraqi Army Division threat, further increasing U.S. and NATO lethality and survivability. For the sake of brevity, the proposition in its totality can be called **CROP: C**annon density of fire, **R**ocket density of fire, **O**rganize FA BNs to three x nine, and **P**re-position FA BNs/equipment strategically.

Operational Concept: In the initial stages of a NATO/Russian conflict in the Baltic region, before U.S. and NATO reinforcements can fight their way in, there will be an unacceptable overmatch of Russian artillery. CROP proposes five additional cannon battalions and 12 additional MLRS battalions. Battalions can operate in Europe on a rotational basis to save money and increase flexibility.[30] Army pre-positioned stock will also need to be increased to accommodate the additional FA battalions.

U.S. Army Brigade Combat Teams (BCTs) currently stationed in Europe are the 2nd Cavalry Regiment and the 173rd Airborne Brigade.[31] Since 2017, 1 x Armored Brigade Combat Team has also been present in Europe on a rotational basis.[32] The Rand assessment of artillery initially available to respond to Russian aggression was seven tube artillery battalions, and three rocket battalions.[33] The proposed 17 FA battalions will be in addition to this. The ten artillery battalions assumed to be capable of deploying within the warning period are either permanently stationed in Europe, a part of an already established rotational unit, or units that are poised to quickly deploy and use pre-positioned equipment.[34] The "P" in CROP proposes that 50 percent of the additional FA battalions will be rotational, attached to already rotating BCTs, and the other 50 percent will be assigned a contingency mission allowing them to quickly deploy and assume control of pre-positioned stock if necessary.

There are two reasons for not permanently stationing additional FA battalions. The first is that it is cheaper. The government would save money on family housing and leasing costs in Europe, overseas cost of living allowance, dependent school systems, and permanent change of station moves.[35] Second, it is flexible. Commanders can assess the imminence of the Russian threat and decide if they want to assume the risk of having a less than desirable Fires presence in the case of unexpected Russian aggression.

Second-Order Effects: Developing munitions, modifying capabilities, increasing the number of artillery systems, and relocating units is a tall order and is bound to have a ripple effect across the other DOTMLPF-P domains. New munitions, systems capabilities, and structure

will require the Training and Doctrine Command (TRADOC) to test the validity of the changes and then update Field Manuals, Army Doctrine Publications, Training Circulars, and other doctrine accordingly.[36] The Fires Center of Excellence will need to determine the "individual and collective training" necessary to safely and effectively implement the modifications.[37]

Under this proposal, existing units will need to grow. The U.S. Army Installation Management Command will need to be activated to modernize and extend unit facilities to suit greater amounts of vehicles, weapons, and people.[38] Every new gun or launcher will require new Soldiers for the crew, leaders, and support personnel.

Stationing research and study will also be rather intensive if CROP is implemented. The Military Value Analysis process will have the daunting task of integrating another 17 BNs into overseas work facilities, medical facilities, housing, etc.[39] Assignment policies, Army regulations, and Department of Defense, Department of State, and congressional policies will also need review and updates. Since CROP will require overseas assignments, multi-national policies and status of forces agreements will present a host of special considerations and restrictions that must be overcome.[40]

Additional Challenges: There will inevitably be difficulties in the integration plan. The majority of trouble will most likely come from the effort to get the right equipment and trained personnel physically to Europe. The CROP proposal does impose yet another rotational and quick reaction requirement on the Army's already full plate, so we must explore all options, such as sharing requirements with our National Guard and Reserve artillery comrades. CROP will also undoubtedly cost a substantial amount of money, but what must be considered are the grave consequences of an unprepared Fires War Fighting Function if an increasingly hostile Russia chooses to strike the NATO allies on their border. The unpopular truth is that if the national strategy is shifting away from counterinsurgency and toward decisive action, then perhaps it is time to redirect Soldiers and funds accordingly. The recent withdrawal of forces from the Middle East may free up the funds and attention necessary to enhance the feasibility of this proposal.

No Hasty Solutions: The solutions proposed in CROP, are robust and effective, but also costly and rigorous to maintain. When this is the case, policymakers often try to turn to the quick fix, but would these other solutions not be mere platitudes, only wishing the problem away? A reasonable critic of CROP would ask where NATO was in all of this. Could we not just ask all our NATO allies to pitch in more? Scholars have recently called attention to the European asymmetry of power that has, in their opinion, been caused by decades of European NATO members freeriding and taking advantage of being under the United States' defense umbrella.[41] This is evidenced by the consistent failure of allies to meet NATO's two percent defense spending goal.[42] It is for this reason that it would be ill-advised to pursue a "burden-sharing" solution.[43] The recommendation of this article remains. The United States Army must take its fate, and unfortunately, all of NATO's, into its own hands. The Army must grow its Fires capability and posture its forces to deter, and if necessary, fight our dangerous adversary east of the Baltics.

…what must be considered are the grave consequences of an unprepared Fires War Fighting Function…

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Army National Guard Fires *as a* Warfighting Function Revisited

By LTC Brad Rittenhouse and LTC Chin Kim

With the reemergence of cross-domain Fires across all echelons, Commanders of the Fires proponent must clearly understand the vision and end state of the new Fires capabilities and organizational designs being developed and established for Waypoint Force 2028 (WP28) Multi-Domain Operations (MDO) capable and AimPoint Force 2035 MDO-ready. After years of persistent conflict, there has been substantial atrophy in Field Artillery (FA) skills and erosion of leader and professional development within the Fires Warfighting Function (WfF). The ability to mass and synchronize Fires at scale has been degraded and at risk in Large-Scale Combat Operations (LSCO). *(Fig. 1)*

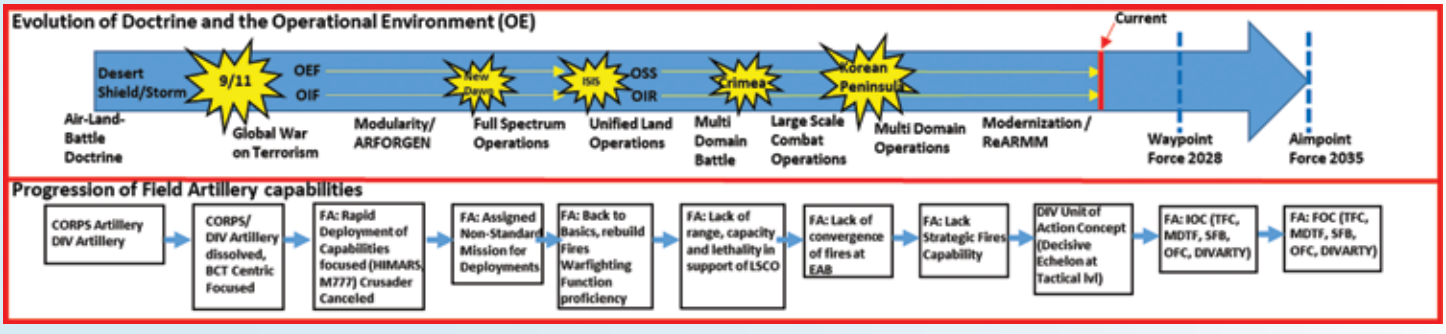
The purpose of this article is to set conditions for the Army National Guard (ARNG) Fires community, at all levels, to not only understand Fires at echelon but to fully contribute and be functional at a warfighter exercise. Developing this deeper understanding of the institutional Fires knowledge will provide the necessary foundation to provide requisite experience to support maneuver forces. This article does not replace doctrine, but rather gives a guide to the resources available to the Fires WfF. This article includes many concepts that are still being designed and developed for the foreseeable future.

Corps Realignment for WP28 *(A concept)*

The Corps facilitates the action of three to five divisions' LSCO. Based upon METT-TC the Theater Army dictates the type of density of the Corps. Divisions are set for specific mission types such as Joint Forcible Entry, Penetration, or Standard (heavy/light). Each of these divisions has a specific mission that can be applied in several scenarios.

The mechanism at the operational echelon for LSCO, from a historic perspective, was Corps artillery, the single organization with the requisite authority, capability, and capacity to synchronize operational Fires. By concept, the Operational Fires Command (OFC) integrates Joint, inter-organizational, and multi-national targeting capabilities. The OFC is the command to plan, coordinate, and deliver Joint all-domain Fires to shape Joint Force Land Component Commander (JFLCC)/ Corps' Area of Responsibility (AOR). The OFC as an assigned headquarters is designed with the capability to strike targets beyond 500 kilometers. The OFC as currently conceptualized expands the former Corps artillery structure to contain a functional FA command with hooks into two specific domains Space and Cyber to integrate lethal and non-lethal Fires. OFC will have a primary responsibility to execute Force Field Artillery (FFA) responsibilities for the Corps, Command and Control (C2) multiple FA Brigades (BDEs) and be the Corps Fires Support Coordinator (FSCOORD)/ Fires Synchronization/Target Development. The OFC will have

Figure 1.



the ability to destroy the enemy Integrated Fires Command, enable freedom of maneuver for airpower, deliver deep Joint Fires and mass reinforcing Fires for subordinate divisions.

The current structure for Corps requires a minimum of two assigned Field Artillery BDEs. The scale and scope of LSCO necessitate multiple Field Artillery Brigades (FABs). One FAB will be the counter-fire headquarters and the other will be the Corps Direct Support (DS)/General Support (GS) FA headquarters. Current Rules of Allocation call for one additional FAB per Corps controlling three or more divisions as re-enforcing. The Corps FSCOORD is the OFC Commander and has command responsibility of the assigned FA BDEs. The OFC is the FFA Headquarters for the Corps.

Important to mention is the Tactical Command Post (TAC) that most artillery Soldiers know at the Brigade Combat Team (BCT) level. The function is no different at the Corps level primarily focused on conducting dynamic targeting operations. The TAC collaborates with the main command post for support as it relocates and synchronizes deep targeting requirements to support operations. At a minimum, the TAC Fires cell includes an Assistant Fire Support Coordinator, Fire Support Officer (FSO), Fire Support NCO, Air Liaison Officer, Targeting Warrant, and Fire Support Specialists. A Corps TAC also includes the Deputy for the OFC.

The Air and Missile Defense (AMD) Cell and Space planners would also provide the current air picture and support dynamic targeting in support of the TAC which is rolled up under the Corps Fires Cell. The new advanced capabilities of these AMD/Space sensors are essential to FA Fires and Targeting. The TAC has the capability to conduct deliberate/dynamic Army and Joint targeting.

As the ARNG Fires community has experienced over the past decade of Division Warfighters, there have been some challenges with the function of the TAC. The most obvious is the utmost importance of the FSCOORD duties at echelon. As we delve further, the FSCOORD duties will be expanded upon as it applies from the operational to the tactical levels.

OFC: Fires Warfighting Function at Corps

The OFC Fires Cell is composed of the Fires Coordination Headquarters (HQs), Air Defense Air Space Management/Brigade Aviation Element Cell, Fires Support Element, Space, Cyber-Electromagnetic Activities, and Fires Cell Plans. The OFC Commander is the Corps FSCOORD and thus the senior Fires officer assigned to the Corps staff. The United States Air Force personnel assist the Fires Support Cell with the targeting process. The Corps FSCOORD organizes and establishes the Joint Target Working Group, which allows the Corps Commander to provide input to the Joint Targeting Cycle planning and execution.

The OFC Fires Cell coordinates, plans, integrates and synchronizes the employment and assessment of Fires in support of current and future operations. The OFC Fires Cell develops high-payoff targets and presents targets to the Commander or designated representative for the attack. The OFC Fires Cell recommends targeting guidance to the Commander. The cell plans, synchronizes, coordinates, and integrates adaptable Fires matched to a wide range of targets and target systems. The OFC Fires Cell coordinates target acquisition, target dissemination, and target engagement functions for the Commander.

At the Corps level, the air and missile defense section is integrated within the Fires Cell to ensure coordination of sense and warning systems, synchronization of Fires, and airspace integration. The OFC Fires Cell coordinates activities and systems that provide collective and coordinated use of Army indirect Fires, Joint Fires, and air and missile defense through the targeting process. The OFC Fires Cell includes elements of fire support, the Air Force Tactical Air Control Party, the air and missile defense section, and liaison officers from Joint or Multinational Fire Support Agencies.

The JFLCC/Corps requires an Operational Fires Command, aligned FAB, and key enablers (Joint/Army) to execute offensive and defensive operations across all domains, prosecuting targets across the JFLCC/Corps AOR to enable the convergence of effects in support of division tactical operations. The FAB supports Corps counter-fire and deep shaping operations. The OFC is designated to C2 the assigned formations.

Field Artillery Brigade *(ATP 3-09.24, Techniques for the Fire Brigade)*

A FAB's primary task is conducting strike operations and delivery of Fires for the Corps OFC. A strike is an attack to damage or to destroy an objective or a capability (JP 3-0, *Joint Operations*). The FAB can be task-organized with Fires delivery, and sensor systems to support the maneuver Commander's mission requirements. The FAB will be task-organized underneath the newly created OFC as its higher headquarters. Depending on the needs of the JTF/CORPS Commander, multiple FABs may be aligned underneath the OFC to provide the maximum effective Fires and counterfire capability to the Commander to shape the JFLCC/Corps AOR. The OFC assigns target sets to engage, target priorities, or effects to create. In most scenarios the FAB will be part of Joint Fires (For more on Corps and Theater Army Operations refer to ATP 3-92, *Corps Operations* and ATP 3-93, *Theater Army Operations).* The Army Service Component Command or Army Forces Commander exercises administrative control over the FAB through the OFC when operating under the control of the Joint Force Commander or another service.

In LSCO, the Corps and Division Commanders are responsible for counterfire throughout the depth of their AORs. The Corps or Division Commander can assign the role of counterfire HQ to a FAB, Division Artillery (DIVARTY), or a separate FA battalion. The counterfire HQ must be allocated the necessary assets to conduct the counterfire fight. During LSCO a Corps OFC should be allocated two FABs, one to serve as the counterfire HQ and one to serve as the General Support-Reinforcing (GSR) role. The counterfire HQ should be allocated Close Air Support and Joint Terminal Attack Controllers. The counterfire HQ will coordinate with the division and Corps G-2 for sensor tasking authority and additional intelligence capabilities to integrate all available assets into the counterfire fight in a proactive manner.

A FAB could be tasked to reinforce another FAB or a DIVARTY. In this role, a FAB would be tasked to reinforce another FAB to provide additional Fires capabilities for the supported command. When reinforcing a DIVARTY, this role enables the FAB to provide Fires assets not found organically in a division to include long-range Fires for division counterfire and shaping operations, reinforcing Fires for BCTs, and the communications and logistical control assets a DIVARTY lacks.

National Guard FABs are ideally configured for this role because they combine both rocket and cannon battalions, a brigade support battalion, and a signal company. The reinforcing FAB could also assume the role of the counterfire HQ for the reinforced FAB or DIVARTY. The FAB would assume control of the reinforced unit's Weapon Location RADAR's operations if operating under centralized control.

Division as the Unit of Action Waypoint 2028 *(Concept)*

As documented throughout military history, the cyclical nature of combat operations necessitates the multiple redesigns of our doctrine due to the fluidity of the complex environment. The most recent change that has occurred is the BCT-centric concept of operations to the division as the unit of action for LSCO. This concept describes how the division formation, with all the enablers, meets the demands of LSCO. For the purpose of this article, the Fires WfF will be the center of this discussion.

Facilitating the division formation capabilities and capacity make the division agile, lethal, and MDO capable in LSCO. The standard division will have the capacity to control three to five brigades which include the DIVARTY. DIVARTY enables the C2 of Fires in support of division operations, shapes the division AOR and integrates lethal/non-lethal Fires.

The DIVARTY enables multiple employment options for the Division Commander to support the main effort, supporting effort, and coverage effects across the division area of operations (AO). Enhanced weapons and unit types are considered for this formation to include DIVARTY, Extended Range Cannon Artillery (ERCA), Long-Range Cannon Artillery, Hypersonic Weapons, and Integrated Fire Protection Capability and Maneuver Short-Range Air Defense. ERCA is a game-changer for the division as it will be organic to select DIVARTYs. ERCA will provide that GS Long-Range Precision Fires for the supported Maneuver BDEs in the close fight. The current initial force mix for ERCA is 2x Regular Army and 2x ARNG. Stationing is still pending senior leader decision.

DIVARTY ***(ATP 3-09.90, Division Artillery Operations and Fire Support for the Division)***

The DIVARTY is the brigade-level command that plans, prepares, executes, and assesses Fires for the division. The DIVARTY Commander is the FSCOORD for the division and is the primary advisor to the Division Commander for the Fires WfF.

The ARNG has been authorized eight DIVARTYs. Each ARNG DIVARTY is aligned with an ARNG division. The ARNG FAB's primary role will be the GS/GS-R and counterfire BDE to an active component OFC. The ARNG FAB's unique structure offers Commanders at the division level and above, the Fires assets for a wide range of mission types including deep Fires, a Corps/Division-level counterfire capability, and the means to reinforce BCT FABs. The FABs assigned to active component Corps OFC are routinely task-organized with Multiple Launch Rocket System (MLRS) and High Mobility Artillery Rocket System (HIMARS) battalions. The ARNG FABs may have cannon, MLRS, and HIMARS battalions.

The DIVARTY is the FFA headquarters for the division. The DIVARTY Commander as the DIVARTY FSCOORD is responsible for integrating all forms of Army, Joint, and Multinational Fires to include nonlethal capabilities. The division Fires cell provides an effective exchange of information to adjacent headquarters, subordinate division elements, and other WfFs. The DIVARTY Commander can integrate the Division Fires Cell with all or part of the DIVARTY staff and targeting personnel.

It is important that nonlethal capabilities are integrated with Fires. The FSCOORD, DIVARTY operations officer, DIVARTY intelligence officer, and appropriate staff officers assist the division with the integration of nonlethal capabilities such as electronic warfare, cyber electromagnetic activities, military information support operations, and information operations. These capabilities are integrated into operations using already established Joint and Army processes such as intelligence, targeting, and the Military Decision Making Process (MDMP).

Overall, the Division Commander is responsible for targeting inside the division AO. The Division Chief of Staff has a key leadership role in synchronizing the division's targeting effort by supervising various staff sections that contribute to the targeting process. The division uses Decide, Detect, Deliver, and Assess (referred to as D3A) methodology to conduct targeting. The Commander's targeting guidance, mission statement, intent, and prioritized objectives set the stage for targeting. The FSCOORD (DIVARTY Commander) advises the Division Commander with formulating targeting guidance and oversees targeting functions.

Some clarity on the roles of the DIVARTY versus the FAB:

- FABs belong to the Corps and are aligned underneath the OFC (pending a senior leader's decision) to provide GS/GSR Fires and counterfire capabilities to shape the JFLCC/Corps AOR
- DIVARTY with its organically aligned BCT FA (DS) battalions (pending a senior leader's decision) belong to the Division Commander to weigh the main effort and shape the Division AOR
- Currently, the DIVARTY receives all sustainment support from the Division's sustainment BDE or Combat Sustainment Support Battalion (Pending DIVARTY as a Formation Force Design Update, organizes BCT FA [DS] battalions underneath the DIVARTY which will create a Base Support Battalion [BSB] organic to the DIVARTY)
- The pending creation of the DIVARTY BSB will help overcome the ammunition management challenges for Division FA units for sustained rate of fire for LSCO

FSCOORD Final Note

The importance of the FSCOORD at all levels cannot be more profoundly important than in LSCO. Fires is the decisive effort to shape the battlefield in an MDO environment. Fires must be able to provide freedom of maneuver for our Joint Force to close with and defeat our near-peer adversary in high-intensity conflict. It is imperative, as the FSCOORD, to plan and coordinate Fires effectively incorporating the new modernized capabilities and changes to organizational design.

Conclusion

This article is not the end-all for your Fires WfF needs, but rather a starting point

to rethinking the artillery doctrine you need to know to be the FA subject matter expert. References for the doctrine are posted throughout for further education and more specific details if needed. The changes are coming fast and furious for the FA, and all inherently positive applications of Fires at all echelons. Fort Sill ARNG personnel stand by at all times to assist the field in all things FA.

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LTC Chin Kim currently serves as the Senior ARNG FA Force Management Officer at Fort Sill, Oklahoma. He is a 23-year career Field Artillery Officer with experience serving as Field Artillery Battery Commander and Battalion Staff Officer.

THE FOLLOWING ARE KEY TAKEAWAYS FROM LESSONS LEARNED ON HOW TO EFFECTIVELY EXECUTE FSCOORD DUTIES AND RESPONSIBILITIES:

- Planning, preparing, executing, and assessing all aspects of fire support for operations and addressing them in rehearsals.
- Working with the air and missile defense officer in synchronizing and integrating Fires WfF capabilities with the other WfFs in support of operations.
- Developing a scheme of Fires to support the operation with the Commander, FSCOORD, and S-3.
- Planning and coordinating fire support tasks in close coordination with the S-3 to support timely development of the FA operations order or FA support plan.
- Developing a proposed high-payoff target list, target selection standards, attack guidance, targeting synchronization, and fire support execution matrices.
- Coordinating the positioning of fire support assets for operations.
- Providing information on the status of fire support attack assets, target acquisition assets, and FA ammunition.
- Recommending Fire Support Coordination Measures to support current and future operations, and address them in rehearsals.
- Recommending and implementing the Commander's counterfire (including radar zones) and other target engagement priorities.
- Recommending to the Commander the establishment, responsibilities, authorities, and duties of a FFA headquarters, as necessary.
- Integrating and synchronizing Army indirect Fires, Joint Fires, and multinational Fires with the other WfFs.
- Directing and supervising the main command post Fires cell to provide fire support for operations and in the development of respective products to support Operation Plan or Operation Order development, including Annex D (Fires) as necessary.
- Advising the Commander and staff of available fire support capabilities and limitations.
- Leading the targeting working group, the key word is LEADING.
- Coordinating the targeting process. Directing the attack of targets by Fires in accordance with the Commander's established priorities and desired effects.
- Working with the chief of staff or executive officer, and S-3 to integrate all types of fire support into the Commander's concept of operations.
- Participating in and providing critical Fires input to the MDMP.
- Coordinating requirements for fire support personnel to support mortar training and calls for indirect fire by maneuver personnel.
- Accompanying the Commander during the execution of tactical operations, when directed.
- Facilitating the synchronization and integration of Fires and maneuver.
- Developing an internal battle rhythm to receive running estimates of information and rehearsal times synchronized with BCT and subordinate unit battle rhythms.
- Establishing, in conjunction with the S-6, a communications plan for primary, alternate, contingency, and emergency means for fire missions and reporting.
- Coordinating the delivery function of targeting.
- Directing the attack of targets by Fires in accordance with the priorities and desired effects established by the Commander.
- Keeping the Commander and staff informed of the current status, location, and activity of all fire support assets.
- Working with Fires cell targeting officers and S-2 to keep maneuver S-2s informed of enemy indirect fire capabilities and limitations.
- Ensuring lower echelon FSOs are aware of assigned fire support and FA tasks and are refining targets in accordance with top-down fire planning.

New York Army National Guard Soldiers from 1st Battalion, 258th Field Artillery prepare to hook up a M119A2 Howitzer to a UH-60 Black Hawk helicopter on Fort Drum, New York, June 8, 2017. The Howitzer was being transported to an area where it could be safely fired as part of the unit's annual training. *(U.S. Army National Guard photo by PFC Andrew Valenza)*


NLD

The Brigade Deep Battle

By LTC Rienk Sijbrandi, Royal Netherlands Army

Deep operations are operations conducted against forces or resources not engaged in close operations. They expand the battle area in time and space, help to shape the close battle, make it difficult for the enemy to concentrate combat power without loss, and diminish the coherence and tempo of his operations. Deep operations are those operations conducted at long range and over a protracted timescale, against enemy forces or resources not currently engaged in close operations. They may be decisive operations, but in general, they will be shaping.

Deep, close and rear operations will occur simultaneously and should be complementary to one another and the overall plan.

Deep operations are normally conducted at Division level and above for this level of formation has the resources to conduct close and deep operations simultaneously. Deep operations may be a specific line of operation within a campaign.

NATO ATP-3.2.1 Allied Land Tactics

Editor's note: *This article is an adaptation of the article "De Brigade Diepe Operaties" by the same author that was published in Militaire Spectator, Vol. 187, 2018-2.*

Brigades are currently missing opportunities provided by deep operations. My personal experience as an artillery battalion Commander is that brigades spend a large amount of time and effort on the tasking and positioning of the battle groups and spend little time on developing a deep operation. An important reason for this focus is that the Brigade Commander seeks the decisive decision during the close operation. North Atlantic Treaty Organization (NATO) supports this approach. It states that deep operations are normally conducted at the Division level and above because this level of formation has the resources to conduct close and deep operations simultaneously. However, should a brigade focus primarily on close operations? Because of potential hybrid threats in the context of which the initiator avoids frontal assaults and carries out actions from a great distance, this question is becoming increasingly pertinent concerning land operations. It is also a question that is arising with increasing frequency because of the greater range of options made available to a Brigade Commander by advanced sensors, weapon systems, and types of ammunition. I would therefore like to contribute to the current discussion regarding the brigade deep fight.

In his role of special staff officer for Joint Fire Support, the Artillery Battalion Commander advises the Brigade Commander on the use of his organic Fire support and the Fire support assigned to the brigade, as is the practice in most NATO countries. He positions the Fire support assets in such a way that the brigade can operate as effectively as possible in deep, close, and rear operations. Because of the 'long arm' of the artillery, the artillery battalion Commander often acts as the *ambassador* of the deep fight. My experiences during brigade-led exercises taught me how a deep operation, with the use of available enablers, significantly contributes to mission success.

I wrote this article to raise the level of knowledge among Brigade Commanders and planners regarding the brigade deep battle. I want to convince them that an effective deep fight creates conditions for success in close operation. The article is also of interest to others in that it provides insight into how a brigade should handle a deep fight. The focus is on the operational theme of warfighting, and although doctrine recognizes both a physical and a psychological dimension in deep operations, I limit myself in this article to the physical one.

In the first part of the article, I present several generalities regarding deep operations before discussing the emergence and historical development of such operations. I then describe how a brigade can effectively plan and execute the deep operation. This subsequent part is largely

based on my own experiences and is augmented with U.S. best practices. This is because, within NATO, the Americans have for many years led the way in the development and refinement of military concepts. The focus of the article is on designing a deep operation. The targeting process is not described in detail.

Generalities

When planning an operation, the brigade uses the *NATO Tactical Planning for Land Forces* (APP-28). This is a rational estimate that the Commander and his staff use to assess, step by step, different possible solutions and ultimately make a decision. According to the Netherlands' doctrine, during a planning process, a Commander and his staff can use a planning tool to organize the brigade's combat power. Indeed, doctrine recognizes different frameworks that may be geographically, functionally, or effect-oriented. This article focuses on a linear and contiguous geographic framework, which is referred to as the geographical framework. A Brigade Commander uses geographic coordination measures to align maneuver, airspace, Fire support, mobility, logistics, and other aspects of an operation. In a combat context, a brigade focuses mainly on a geographic framework. Within a geographical framework, a Commander and his staff distinguish between deep, close and rear operations. These operations may take place either successively or simultaneously. A Commander must distribute his combat power well. In a well-considered way, he must specify when and by what means he intends to engage his adversary, who is spread across the area assigned to the Commander. Unfortunately, I know from personal experience that in some cases, the deep operation is limited to specifying positions for the brigade reconnaissance unit to make early warning for the brigade possible. The brigade, therefore, does not use the opportunity to deliver a major blow to the adversary in-depth and does not sufficiently exploit the power of the Fire support.

The security situation at the edges of the NATO treaty area in Europe has been changing rapidly in recent years. NATO units, including those of the Netherlands Armed Forces, must take account of an adversary that is capable of rapidly deploying a large conventional force. Moreover, such an adversary uses hybrid methods of warfare. To have a chance of success in a conflict with such an adversary, brigades should do everything in their power to ensure that the adversary is in a degraded state by the time it makes contact with the brigades' battle groups. A brigade must therefore already engage the adversary in the depths of enemy territory to disrupt and delay the adversary. This will prevent the adversary from conducting an all-out attack on the brigade's maneuver units in the Forward Edge of the Battlefield Area (FEBA) at full fighting strength. This aim underscores the urgency of engaging in combat in depth. Our modern artillery plays a key role in this regard.

According to Netherlands' doctrine, each organizational level has a deep operation. I would qualify that statement by asserting that each level with command and control, maneuver, Fire support, and intelligence capabilities can conduct its deep operation. A brigade has these capabilities. The brigade staff has to align these capabilities to create synergy such that the ultimate effect is greater than the sum of its parts. This is how the brigade conducts combined arms warfare, a unique characteristic of a brigade. Doctrine discusses depth in terms of the expansion of an operation in time and space based on aims, means available, and the objectives to be achieved. Today's deep operation can properly be considered to be tomorrow's close operation. This is simply because enemy units that are positioned in the rear area may appear at the front the following day, engaging the adversary in-depth forces the Commander to think beyond the close operation. He must look for opportunities to attack the adversary in his rear area to deprive him of the will to fight.

1. The evolution of the deep operation

The deep battle has its origins in a Russian theory of warfare. This theory was based on experiences at the Western Front during the First World War. Russian experiences during the war against Japan at the beginning of the 20th century also contributed to the development of the theory. Following the First World War, Russia looked for ways to break the deadlock of trench warfare. The adversary was always able to use reserves in-depth to reinforce a threatened sector in time, even before the attacker was able to exploit penetrations. The Russian military theorist Mikhail Tukhachevsky (1893-1937) believed that offensive-oriented units could break

What is geographic depth?

Deep operations are variable and are not bound to fixed, assigned distances. Operations conducted against an unbound enemy beyond the FEBA, the front line, can be classified as deep operations. In a theoretical sense, technological possibilities, the range of sensors, Command, Control, Communications, Computers and Intelligence (C4I), and weapon systems determine the boundaries of a deep operation.

Example of the brigade deep, close and rear concept seen within a higher echelon's equivalent for the geographical framework (Handbook Tactical Operations, 2-70).

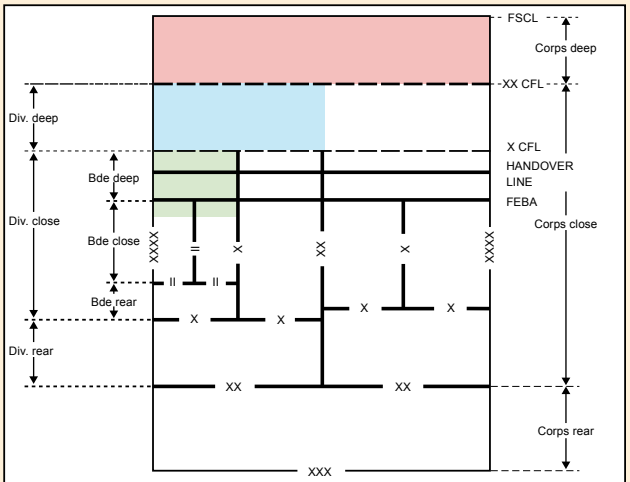

Figure 2-25: Example of brigade deep, close and rear concept seen within a higher echelon's equivalent for the geographic framework (corps area responsibility with a covering force operating in front)

The brigade deep area extends from the forward edge of the battle area (FEBA) out to the brigade CFL whereas the divisional deep area extends from the brigade CFL out to the divisional CFL. The FSCL depicts the geographical extent of the corp's resonsibilities. In this example, the divisional CFL is also the FLOT. The brigade CFL will probably be depicted just in front of the handover line with the covering force. During the conduct of the operation the CFLs may be adjusted as required.

this deadlock. The emphasis in this regard was mainly on maneuvering. Tukhachevsky introduced the idea of the deep battle to break through the enemy's first line of defense. His friend Vladimir Triandafillov further developed the idea of the deep battle during the interwar period. Triandafillov introduced the term 'shock armies' for units that were capable of breaking in and subsequently cutting through the enemy's line of defense. Georgii Isserson later translated the deep battle idea into a concept for deep operations. He focused primarily on time and space factors in-depth and the organization of units in echelons. Isserson became convinced that it was technological developments in particular that made deep operations possible. He referred in this regard to innovations, such as the use of airborne troops in combination with mechanized operations, long-range weapon systems, including air forces, which underwent considerable development in the interwar period, more accurate artillery, and the gathering of intelligence far beyond the front line. In short, a deep operation is a dynamic concept and is directly related to technology.

During the Cold War, the Soviet Union continued to take deep operations as the starting point. The Warsaw Pact, to which the Soviet Union was a party, formed various operational maneuver groups. These attack formations, meant to overwhelm, were echeloned in depth. The enormous mass of tanks, artillery, and mechanized infantry, all of which could advance in-depth, offset NATO's qualitative overmatch. The objective of a Warsaw Pact attack formation was to break through the front line and achieve a decisive blow to advance deep into Europe. NATO would respond to such an offensive by conducting delaying actions to give U.S. units the time required to relocate from the U.S. mainland to the European theatre of operations. This was evidenced by NATO's annual Reforger exercises. If NATO's conventional response to the 'red hordes' proved inadequate, the Alliance could use tactical nuclear weapons. Fortunately, such an offensive and the response to it never materialized. The result would undoubtedly have been a very large-scale conflict.

Following the failure of Vietnam, the U.S. military had to reinvent itself in the 1970s. In Europe, more specifically in Germany, the U.S. military saw the Warsaw Pact's tremendous quantitative overmatch on the other side of the Iron Curtain. How could you defend yourself against such large formations? U.S. military experts were forced to study different views on warfare in more detail. They did not limit themselves to contemporary views. They also focused on the lessons learned from World War I. They thoroughly examined what England, Germany, and Russia did with these lessons learned. The doctrines that the German and Soviet militaries used in the interwar period were studied in detail. Moreover, the Americans paid close attention to operations of the Israel Defense Forces during the Six-Day War (1967) and the Yom Kippur War (1973).

The Americans were impressed by Israel, a country with limited strategic depth that had nevertheless managed, twice within a decade, to defeat forces that were vastly superior in number. Neighboring Egypt, Syria, and Jordan, supported by other countries in the Middle East, had twice attempted to defeat Israel militarily but had not succeeded.

Based on Israeli experiences with firepower during the Yom Kippur War and to establish a conventional response to a large-scale Soviet attack, the Americans developed the concept of Active Defense in the 1970s and 1980s. The central idea was extending the battlefield, the purpose of which was to yield ground slowly to gain time for the preparation and execution of a NATO counterattack. This doctrine was heavily criticized, as the battlefield would be extended in a backward rather than a forward direction. In contrast to Tukhachevsky's theory, the Active Defense doctrine originated from a defensive context. The development of Active Defense shifted the emphasis to firepower rather than the maneuver.

The Americans continued to think about how they could turn defensive-oriented Active Defense into a general operational concept. In this connection, the use of depth was important to them. The idea of extending the battlefield ultimately resulted, in the 1980s, in the American AirLand Battle (ALB) concept, the motto of which was 'Fight outnumbered and win.' The key basic principles of the ALB concept were initiative, depth, flexibility, decentralized authorizations, and synchronization. For the first time, a deep operation and a forward extension of the battlefield were envisioned. The concept provided the option of firing in-depth on the second echelon to create favorable conditions for the close operation. The ALB concept focused primarily on the army corps level. This level provided the fundamental headquarters. The Divisions would engage in combat, while the army corps, with organic (rocket) artillery and in coordination with airpower, would conduct the deep operation.

There was a major role in the ALB concept for Close Air Support (CAS) and Battlefield Air Interdiction (BAI), but the air force was never in favor of airpower in the role of 'flying artillery'. The air force's priority was achieving air superiority. The next priority was attacking ground targets of strategic significance that were located far beyond the battlefield, preferably through BAI. This situation changed, however. The creation of a Tactical Air Command resulted in a functional relationship with the land domain. The air force now contributed to both deep and close operations. The U.S. specifically developed the A-10 Warthog fixed-wing aircraft and the Apache attack helicopter for these tasks. Forward Air Controllers (FACs) to guide CAS and Fire Support Coordination Measures, such as the Fire Support Coordination Line, were used to achieve simultaneity and coordination during an operation. The introduction of the Multiple Launch Rocket System (MLRS) made it possible for the army corps to independently engage targets at a great distance. The MLRS launched the Army Tactical Missile System, which has a range of 300 kilometers.

In the 1980s, the Follow-On Forces Attack (FOFA) strategy gave NATO a variant of the ALB concept. NATO units were to stop and cause as much damage as possible using delay, disrupt, and destroy operation, in-depth to the Warsaw Pact's second echelon and to not be overwhelmed by this second echelon if the Warsaw Pact's first echelon was stuck or had been destroyed. According to the experts, the destruction of these units using the aforementioned destroy operations was not feasible. As part of NATO's deep operation, this form of interdiction would take place simultaneously with the elimination of the first echelon during the close operation. The most important instruments for NATO's deep attack were the air force, artillery, Special Forces, electronic warfare, and deception.

There are historical reasons for the scant attention paid in the Netherlands to the deep battle at the brigade level. One of them is practical in nature. The number of training areas in which deep-operation exercises can be conducted is limited in Europe. Consequently, a deep operation often remains an exercise on paper and a computer. The physical effects of such an operation are therefore not visible. There is another important reason for the limited interest in deep operations, and something can be done about it. When the Royal Netherlands Army still had an army corps with Divisions, they were the levels that conducted deep operations. The brigades focused on the Division's close operations and did not have the

Simultaneity is the ability to perform activities simultaneously and in an integrated way in deep, close and rear operations. Linked to the right timing, simultaneity results in a situation in which the effects are greater than they would be if the activities were performed in isolation. Simultaneous operations significantly degrade an adversary's capabilities. They deprive an adversary of his freedom of action, reduce his flexibility and staying power, and frustrate his plans and coordination. Furthermore, they impair his decision-making process. They, therefore, create an unsolvable dilemma for the enemy Commander. He must respond to multiple threats in the breadth and depth of his formations. The simultaneous use of combat power everywhere in the assigned area prevails over the attrition method of successive operations.

The term 'simultaneity' actually comes from the world of theatre and film, where playwrights and scriptwriters have different actions that take place simultaneously on the stage or in the film, as a result of which the actions reinforce each other.

means to operate in-depth. The primary task of the brigade's artillery battalion, at the time with a planning range of 15 kilometers, was to support the maneuver battalions. Indeed, the brigade's artillery battalion was organized for this purpose: for each maneuver battalion, there was a combat battery without further, specific capabilities to conduct deep operations at brigade level. Following the disappearance of the Dutch Army Corps in the 1990s and later also at the Division level, brigades were only moderately strengthened with means that made it possible to conduct deep operations at the brigade level.

Another development of the 1990s was the attention that the Netherlands Armed Forces started to devote to expeditionary operations, the main focus being on peace support (the Balkans) and security (Iraq and Afghanistan, for example). Although such operations certainly had a deep dimension, these deep operations were mainly limited in terms of time and circumscribed according to the objective. Moreover, these deep operations were not conducted within a Geographical Framework, as is usual in combat campaigns. These developments meant that knowledge about deep operations was never properly built up at brigade headquarters.

2. The contemporary deep battle of the brigade

Although many capabilities have been centralized as a result of spending cuts, the current Dutch Brigade certainly has capabilities to conduct combined arms warfare (using an integrated approach) in operational circumstances. Situational awareness is a key condition for the successful conduct of operations. This applies in full to deep operations. Using the available sensor capabilities, such as the Brigade Reconnaissance Unit, Remotely Piloted Aerial Systems (RPAS), electronic tracking and jamming capabilities, and (weapon location) radars, a brigade can detect and identify targets that are deep in enemy territory. Directed from the sensor operations cell, a brigade

> In addition to the basic principles of military operations, deep operations have the following characteristics: (1) simultaneity, (2) an integrated approach, also known as combined arms warfare, (3) accurate, reliable and current intelligence, (4) a continuous targeting process and (5) an integrated planning process.
>
> *U.S. Army, ATP3-94/2 Deep Operations, September 2016*

with a sensor-to-shooter link can rapidly close the kill chain.

The artillery battalion remains the most important instrument for a brigade's deep fight because it can engage precision and area targets up to a range of 50 kilometers. The higher level in the chain of command can also temporarily and locally strengthen the organic brigade with Joint (air power, for example) and combined (MLRS, for example) enablers. Furthermore, offensive (tactical) cyber capabilities are now available to a brigade. The cyber dimension is playing an increasingly important role in deep operations in terms of both sensor capabilities and, particularly, effector capabilities. The Brigade Commander is therefore certainly capable of conducting an effective deep operation, although the close operation should never be completely dependent on the outcomes of the deep operation.

High-quality, deep-find, and strike capabilities play a crucial role in dealing with Anti-Access/Area Denial (A2/AD) weapons. These weapon systems, such as long-range ground and air defense missiles, can keep an adversary at a distance or deny access to an area. Russia has established what is referred to as A2/AD bubbles at several strategic locations, such as at Kaliningrad, the Kola Peninsula, and Crimea. From Kaliningrad alone, Russia can potentially significantly impede the deployment, supply, and/or reinforcement of NATO troops in the Baltic states.

In a conflict with a near-peer competitor, there are usually more targets than systems for detecting and taking combat action. In such situations, Commanders must make choices. To successfully conduct a brigade deep fight, brigade planners must spend a significant part of the time on the preparation of the deep fight. They must synchronize the planning of the deep operation with the planning of close and rear operations. The Brigade Commander must provide guidelines so that the planners can formulate answers to the following questions:

1. **How can the brigade influence the ECOA in a way that is as favorable as possible for the brigade?**

2. **How, where, when, and with what means can the brigade degrade the adversary as much as possible so that there is a favorable combat power ratio for the brigade during the close operation?**

When developing a plan for a deep battle, the brigade planners must focus on the effects to be achieved. In this connection, a shared understanding of definitions is important because everyone involved must mean the same thing regarding an effect to be achieved. For example, the term 'to neutralize' caused a great deal of confusion during operations of the British Special Air Service (SAS) in Northern Ireland at the beginning of the 1970s. To British politicians, 'to neutralize' meant rendering IRA fighters *hors de combat* without killing them, whereas to the battle-hardened SAS members, 'to neutralize' meant eliminating IRA fighters. The targeting process is part of command and control and depends on accurate intelligence. This process makes it possible for the brigade to rapidly and effectively respond to opportunities that emerge or to threats that have been identified. This is done by identifying and selecting targets in the planning phase that are the most appropriate to engage. In this way, the brigade links scarce sensor capabilities to lethal and/or non-lethal force capabilities and operates in a focused and effective manner.

The land tactical targeting process is an integral part of command and control. It is the element that links design, plan, and control. By means of planning, conducting, and evaluating operations and activities, the land tactical targeting process focuses the unit's efforts on identified, selected, and prioritized targets. The land tactical targeting process is cyclical and has four phases: (1) Decide, (2) Detect and Track, (3) Deliver and (4) Assess (D3A).

C-JISTARC 01 doctrine bulletin: 'Inlichtingenondersteuning aan het TBM'

Critical capabilities that the adversary needs to complete his mission are placed on the High-Value Target List (HVTL). Engaging high-value targets takes the sting out of the adversary, as it were. During the planning process, the brigade staff develops its Courses of Action (COAs), partly based on the ECOA of which it is aware and the HVTL. This results in the High-Payoff Target List. This list includes enemy targets whose destruction will significantly contribute to the success of the brigade's COA.

In an Effects Guidance Matrix (EGM) of each high-payoff target, brigade planners then record which sensors in the identified Target Area of Interest (TAI) will perform target identification. A TAI is an area that the brigade is interested in because of the nature and number of potential targets. An EGM also specifies when and by what means the brigade must engage the target, what the desired effect must be, who will perform the Battle Damage Assessment and what criteria the brigade must use during target selection. Brigade planners must include enough redundancy in the EGM for both sensors and force capabilities because 'two is one, one is none.' For example, brigade planners must often plan ground-based Fire support as a backup to CAS in case the aircraft is re-tasked at the last minute. In broad terms, the EGM is the product of the brigade targeting process. Thorough planning, including that of the deep battle, ensures that the brigade allocates enough combat power capabilities and means to the deep fight. It must be possible for some of these means, such as RPAS and artillery, to switch flexibly between the deep and close battle. The EGM is therefore an important document that should be accorded a prominent place in the brigade order rather than be appended to an annex.

3. Takeaways

The brigade must focus much more on the deep battle. The brigade staff often devotes a great deal of thought to the planning of the close operation because it is in this operation that the Commander usually seeks to decide the matter. However, it is important to bear in mind that the conditions in which the brigade conducts the close battle are often determined by the successful activities of the brigade that preceded them, that is, by the brigade's deep battle. Mission success or failure, therefore, depends to a large extent on the effort that the brigade has put into the deep battle.

The brigade needs to resume conducting combined arms warfare, and the brigade deep operation is simply part of such warfare. In operational circumstances, the Brigade Commander has enablers that make the deep battle possible. This deep battle creates the conditions for a future close battle. They help the Brigade Commander take or retake the initiative and therefore dictate the pace of the battle. An integrated approach to planning and controlling capabilities generates synergy. However, the outcome of the close operation should never depend entirely on the outcome of the deep operation. The brigade must ensure that the close operation is supported by sufficient means once it starts.

Finally, an effectively conducted deep operation disrupts the enemy Commander's decision-making cycle. Depriving him of his freedom of action prevents him from deploying his troops where and when he wants to. A well-executed deep operation makes it possible for the brigade to engage a numerically superior adversary from a distance and thereby ensure a more favorable combat power ratio for the close operation. With a deep operation, a brigade exploits its technological superiority and limits its casualties.

As the Commander of the artillery battalion, I was proud to make a significant contribution to brigade combat operations. The artillery can support a brigade not only in the close battle; it can do so, particularly in the deep battle. Each enemy eliminated by Fire support in-depth is no longer a threat to the maneuver units at the FEBA. The deep battle is, therefore, a modern translation of the time-honored adage of Sam Colt, the American who made the revolver famous:

"Never send a man if you can send a bullet."

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Operation Thunderbolt:

Multiple Launch Rocket System Interoperability Lessons Learned for Large-Scale Combat Operations within the U.S. European Command Area of Responsibility

By CPT John "Jack" Worthington

Since its reactivation in November 2018, the 41st Field Artillery Brigade (FAB) sought to provide the capability of long-range precision Fires throughout the United States Army Europe and Africa's (USAREUR-AF) Area of Operations (AO). Validation of this concept occurred through Operation Fires Shock, a series of live-fire exercises throughout Europe and Africa, culminating with Operation Thunderbolt in Setermoen, Norway.

The 41st FAB currently holds two Multiple Launch Rocket System (MLRS) battalions (BNs), 1-6th Field Artillery Regiment (FAR) and 1-77th FAR, composed of 32 MLRS. The U.S. European Command area of responsibility covers over 21,000,000 square miles, including 51 countries and territories. Operating in a different unit's battlespace and relying on that unit to provide requisite classes of supply can be a difficult task for artillery when that host unit is American. The potential for friction multiplies when that other unit is a foreign partner and there is an additional need to operate within their fire mission processing chain.

Operation Thunderbolt demonstrates the capacity for interoperability between MLRS and partner forces and serves as a blueprint for further operations. The Operation Thunderbolt package consisted of an MLRS platoon, with four M270A1s, the platoon and battery operations center, a BN Liaison noncommissioned officer (LNO) team, a maintenance support team, a fuel team, and an S6 team with a Secure Internet Protocol Router/Non-secure Internet Protocol Router Access Point satellite terminals, or SNAPs. The mission was unique in that the U.S. MLRS platoon package fully integrated into the higher headquarters of a North Atlantic Treaty Organization (NATO) ally, conducted planning, received targeting data, and sourced the bulk of sustainment support through the host nation. The following is a collection of lessons learned and friction-reducing recommendations to prepare for allied force integration.

Integrated Fires Planning

Due to COVID quarantine restrictions, the timeline for integration and bilateral planning was abbreviated before execution. The shortened timeframe made it crucial that U.S. planners were pulled in as soon as possible, which the Norwegian army did. In the week before the live-fire event, there were multiple structured planning meetings

per day, occurring at different echelons. Within the Norwegian Field Artillery Battalion, U.S. counterparts were invited to attend the Fires rehearsal, artillery movement rehearsal, as well as daily battlefield update briefs leading into the live fire. Brigade North held Combined Arms Rehearsals (CARs) and daily Brigade safety meetings in the lead-up to the exercise. The CARs presented the opportunity to discuss tactical considerations when operating around MLRS (such as maintaining distance due to the risk of counterfire). The safety meetings ensured that all moving parts were fully deconflicted and that all elements (including maneuver) understood the safety distances and parameters of indirect fire systems. This meeting also gave the U.S. planners a perfect platform in which to discuss the weapon system and avoid any safety issues prior to the event.

What is crucial in these larger meetings is the benefit of having both parties in the same place to provide a venue in which appropriate leadership could meet counterparts from the partner nation. From there, they could interact, exchange contacts, and schedule more detailed follow-on planning and integration. This type of networking is taken for granted in established organizations where one can look in an updated phone directory and immediately find who they need by position. Of particular importance is the early integration of signal assets and communications subject matter experts. Early coordination concerning frequency management and unique geographic complexities (such as operating a SNAP as far north as the Arctic Circle) is necessary to ease further Fires coordination.

Allied Fire Mission Processing

The fire-mission thread during Operation Thunderbolt relied on the use of Artillery Systems Cooperation Activities to link the U.S. Advanced Field Artillery Tactical Data System with the Norwegian ODIN Fire Support system. Once established, this allows fire mission processing to flow from the Norwegian observer to the American shooter without an American liaison performing a "swivel chair" role. The main identified friction point in this process is a lack of established roles and Internet Protocol (IPs) for Norwegian observers and Fire Direction Centers, requiring manual input prior to the exercise. A useful tactic, technique, and procedure is the creation of a secured spreadsheet containing partner roles and IPs operating in the area, decreasing the time for troubleshooting and switching observers without a delay in fire mission processing.

Using a Common NATO Language

Despite consisting of more than 50 Norwegian service members and just a handful of Americans, all planning meetings were conducted in English. Our Norwegian allies did not do this just for our benefit. We did not need to be talked through the coordination between two Norwegian elements on the opposite side of the battlespace; however, the Norwegian army chose to work through that discussion in English. This highlights their view of the importance of interoperability between NATO allies. Language barriers can be difficult when working through tactical problem sets. The Norwegians chose to mitigate this friction point by utilizing English as a common language during this event and avoiding misunderstandings with participating allies by being strict with their terminology.

Speaking the same language entails far more than an ally brushing up on their English. That is because we do not speak English, we speak Army. The terminology we use in operations often has a meaning that is precise and purposeful. NATO standardization is an enduring effort, captured and codified by the NATO Standardization Office in Brussels. While the terminology we learn through the schoolhouse predominantly follows the NATO standard, it can be beneficial to review the *NATO Handbook of Land Operations Terminology* (AAP-39) when preparing for multi-national operations. Above all, planners need to be precise with their terminology to avoid introducing additional friction.

Using a common language pertains just as much to the use of common NATO doctrine and products. This is especially important in the Fires community, dealing with the synchronization and de-confliction of multiple platforms in time and space. While COVID restrictions hampered the U.S. *Thunderbolt team* from taking part in the earlier planning of the event, the partial product from the Norwegian Brigade North was very familiar. The Norwegian order, annexes, and appendices all could have come directly from the Fires Center of Excellence. The concept of Fires, Fire Support Execution Matrix, Attack Guidance Matrix,

and High-Payoff Target List facilitated the understanding of the mission, enabling further integration. This standard format made it easy to digest the order, identify issues, submit Requests for Information, and begin internal planning.

This should serve as a lesson to U.S. elements who tend to stray from our doctrine in orders production. The standardization of our doctrine makes it easier to work across the military and with our allies. While we may think we have come up with a better way of communicating the mission, using unfamiliar products or terminology often adds unnecessary friction, especially when incorporating allied elements. When world events require a united NATO effort, we will need to fall back on standardized terminology, doctrine, and products to succeed together.

Common Logistics

The *Thunderbolt Team* relied on Brigade North through the Norwegian Artillery BN for supply classes I, III, IV, and VIII (rations, petroleum, oils, lubricants, and medical). In decentralized MLRS operations throughout USAREUR-AF's AO, we would need to rely on units in our AO for these supplies. In Operation Thunderbolt, liaisons synchronized with the partner units' resupply timeline to ensure support promptly. We collocated the Norwegian LNO with our Battery Operation Cheif so he could communicate all timeline changes quickly and we could quickly pass emerging needs to our counterparts. Key to this was an LNO with a direct line of communication to the Artillery BN combat operations center.

Class V and IX are areas where the unit must be self-reliant when operating in a partner-nation AO. For Operation Thunderbolt's live-fire portion, we utilized four pods (and four empty pods) of M28-A1 Reduced Range Practice Rockets to meet our Field Artillery Table XII training requirements. However, all multinational exercises are opportunities to think through tactical munitions planning and management for any extended real-world mission where the unit operates far from U.S. resupply. For 155 mm, 105 mm, and mortar ammunition, a NATO standardization agreement and associated Allied Ordnance Publications layout indirect fire ammunition interchangeability (AOP-29, Parts 1-3). In contrast, MLRS/HIMARS, by their unique nature, preclude interchangeability with other systems. Unless the U.S. unit is operating in a country that happens to utilize an M270 variant, they will have to carry everything they intend to shoot.

Fully manned and fully mission capable, a platoon and their ammunition section would be able to haul 40 pods (two per M270A1 MLRS, four per M985A4 HEMMT, four per M989A1 HEMAT). If provided a Target List Worksheet or concept of Fires, the load-out plan should first support that plan. If not, the unit needs to ask questions and conduct analysis. What are the indirect Fires capabilities of the unit/state being supported? What are their capability gaps? How can MLRS be used to address those gaps? Generally, the unique capabilities MLRS provides are range and precision with the Army Tactical Missile System. Munition planning should correspond with loading pods that provide these capabilities to the force, tailored to an expected target set. Above all else, a Class V load-out decision must be made with transparency between U.S. decision-makers and the supported ally so all parties understand the capabilities coming to the table.

Just as MLRS/HIMARS munitions are unique, most repair parts cannot be sourced through the host nation unless they also operate an MLRS variant. Generally, the team had to bring in all the repair parts needed for the operation. Class IX loadout requires nuanced and deliberate data-centric planning ahead of time. Upon the first warning order for Operation Thunderbolt, the 1-6th FAR maintenance control team began this planning process.

Through Global Combat Support System-Army (GCSS-A), maintainers were able to review historical data for parts ordered across the fleet. Using these numbers, the team built a container of Class IX, prioritizing items most likely to be the cause for a non-mission capable launcher. In addition, the team leveraged the expertise of our Lockheed Martin field service representatives to identify and load out vulnerable launcher module parts which aren't ordered through GCSS-A. This container traveled with the unit to Norway on an M1120A2 Load Handling System, which our maintenance team accessed as they identified faults. The deliberate planning of the Class IX load resulted in all four MLRS remaining fully mission capable throughout the field training and live-fire exercise, an achievement difficult even while operating within a home

station training area. To further mitigate the risk of downed vehicles, a unit could perform a full technical inspection of the fleet, identifying any significantly worn components and proactively replacing those parts before movement.

Conclusion

While Operation Thunderbolt was a unique exercise with Norwegian partners, the lessons learned can apply to firing units striving to reduce friction when operating decentralized with any partner nation. Successful integration with partner forces is something we often assume will happen organically. It does not. When units introduce questions of interoperability into their day-to-day training, integrating with partner units becomes far more feasible when real-world events make it a necessity. Unit Commanders need to start thinking about what steps they need to take to operate for an extended period in an allied AO without U.S. logistical support. Interoperability, like any other operation we do, requires deliberate planning, preparation, and rehearsals to execute smoothly.

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An M109A6 Paladin Howitzer of Charlie Battery, 2nd Battalion, 142nd Field Artillery Brigade, fires a round during a fire mission at the Fort Chaffee Joint Maneuver Training Center near Barling, Arkansas, May 14.
U.S. Army National Guard photo by SPC Stephen M. Wright

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