



Field Artillery.

Professional Bulletin

2024, Issue 2



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Field Artillery

Professional Bulletin

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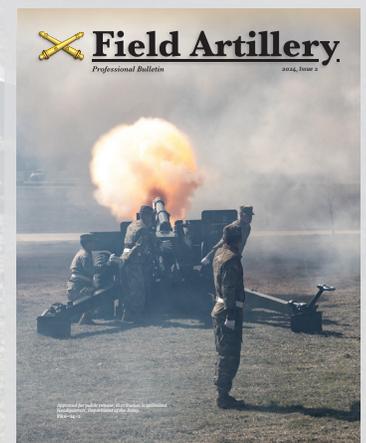
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Purpose

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

A Cannon Salute at the promotion ceremony of BG Curtis King at Fort Sill, Oklahoma on 23 February, 2024. (Photo by Judith Oman, Field Artillery PAO)



FROM THE COMMANDANT

Brigadier General Alric L. Francis was born in Brooklyn, New York and attended Appalachian State University. He majored in English and was a graduate of the Army Reserve Officer Training Corps (ROTC) in 1995. Following graduation, he accepted a commission as a Second Lieutenant in the United States Army and attended the Field Artillery Officer Basic Course at Fort Sill, Oklahoma. BG Francis' initial assignment was with the 1st Cavalry Division at Fort Hood, Texas where he served as a Platoon Fire Direction Officer, Company Fire Support Officer, Platoon Leader and Battalion Intelligence Officer with 1st Battalion, 82nd Field Artillery Regiment.

In 1998, he deployed as a platoon leader to NATO-led Stabilization Force (SFOR 4) mission to Bosnia. In 2000, he was assigned to the 3rd Infantry Division (Mechanized), Fort Stewart, Georgia, where he served as an Assistant Fire Support Coordinator (AFSCOORD) for the Division Headquarters (DIV HQ) and deployed to Bosnia with the DIV HQ as part of (SFOR 8/9). In March 2002, he was assigned to 1st Battalion 41st Field Artillery Regiment as the Battalion Operations Officer and then deployed in 2003 to Operation Iraqi Freedom, where he took command of Charlie Battery, 1st Battalion 41st Field Artillery Regiment. In 2004, he took command of Alpha Battery 1st Battalion 76th Field Artillery Regiment and deployed in support of OIF 3.

In 2005, he took command of Delta Battery 1st Battalion 76th Field Artillery Regiment. In 2006, BG Francis was assigned to Human Resources Command (HRC) Alexandria, Virginia, where he served as the Field Artillery Branch Captains and Majors Assignments Officer. In 2008, BG Francis served in a fellowship at the United States Agency for International Development (USAID). In 2009, he joined the 3rd Brigade, 3rd Infantry Division, Fort Benning, GA, where he served as the Brigade Fire

Support Officer, Brigade Planner, Executive Officer 1st Battalion, 10th Field Artillery and Executive Officer, 3rd Brigade, 3rd Infantry Division. Upon arrival to 3/3 ID, he deployed with the brigade headquarters to Iraq in support of Operation Iraqi Freedom and the transition to Operation New Dawn.

In 2012, BG Francis was assigned as a Special Assistant to the Director Army Staff at the Pentagon. In 2013, BG Francis commanded the Field Artillery Squadron, 3d Cavalry Regiment and deployed to Afghanistan in 2014. In 2016, BG Francis served as a military assistant to the Secretary of the Army.

In 2018, BG Francis served as a Director for Defense Policy and Strategy as a member of the National Security Council, Executive Office of the President, The White House and subsequently Commander of the 3rd Infantry Division Artillery (DIVARTY) at Fort Stewart, Georgia. In 2021, he served as the Executive Officer for the Army Vice Chief of Staff in the Pentagon and then as the Deputy Commanding General (Support) (DCG-S), then the Deputy Commanding General (Operations) (DCG-O) for the 1st Armored Division at Fort Bliss, Texas.

Currently, he is the Commandant of the Field Artillery School and Chief of the Field Artillery at Fort Sill, Oklahoma.

His awards and decorations include the Defense Superior Service Medal, Legion of Merit (2nd Oak Leaf Cluster), Bronze Star Medal (3rd Oak Leaf Cluster), the Meritorious Service Medal (6th Oak Leaf Cluster), Army Commendation Medal (Oak Leaf Cluster), the Army Achievement Medal (Oak Leaf Cluster), the Presidential Service Badge, the Army Staff Identification Badge and the Combat Action Badge. Brigadier General Francis holds a M.A. degree from The United States Army War College.



FIELD ARTILLERY SCHOOL
Commandant
BG Alric "Ric" L. Francis



GEN Raymond T. Odierno

BEST REDLEG

2024 | Fort Sill, Oklahoma



Top: The Fires Center of Excellence and Fort Sill hosted the inaugural Field Artillery **Best Red Leg Competition**. The opening ceremony was held on the Fort Sill Polo Field on May 9, 2024.

Middle: Day three, participants in the **Best Redleg Competition** showcased their skills with live fires, call-for-fire missions, written exams, TBL V processing and tactical comms execution.

Bottom: The 13B, 13F and 13J teams hustled around the basic training area, tackling a grueling stress shoot and facing off in a pugil match against the formidable drill sergeants of the 434th Field Artillery BDE. They also conquered medical lanes, nailed their weapons qualifications and more. (Photos by Judith Oman, FA School PAO)



Of Tattoos and Constitutions: Redlegs' Heritage and History

By Dr. John Grenier, Field Artillery Branch Historian

Each year since 1984, the U.S. Field Artillery Association (USFAA), in conjunction with its general membership meeting and often with the Fires Symposium held at Ft. Sill, has conducted a tattoo, or a musical tribute to honor a remarkable Redleg.¹ Today's Soldiers may be slightly confused about musical tattoos because "tattoo," as both a verb and a noun, means something very different than a musical presentation to acknowledge an individual's outstanding contributions to the Field Artillery. The musical tattoo nonetheless touches on our understanding of what it means to be an American and a Soldier, in profound ways. The Army and our ranch are deeply interested in our heritage (traditions, customs and habits) and our history (an analysis of past events to explain why things happened) to help us define who we are as service members and Redlegs. Musical tattoos and, frankly, skin tattoos, are part of our both heritage and history, and they can help bind us together as a professional community.

A tattoo was originally a musical command (usually played by drummers) to tell Soldiers to return to their quarters. The practice started in the 1600s, when most Soldiers lodged in private homes in the towns that they garrisoned. Generally, armies did not build barracks to house soldiers, but instead placed them in civilians' houses or places of business. The king required homeowners or shopkeepers to provide Soldiers with shelter and bedding (it could be as simple as a pile of straw in a covered pigsty or a loafing shed, for example), candles for light, and firewood for heat. The army sometimes reimbursed the landlord for expenses; sometimes it did not. The Founders (we used to call them the Founding Fathers) included the Third Amendment in the U.S. Constitution, not because of a reaction to the costs involved in feeding and housing soldiers, but rather the principle that armed agents of the state must be kept away from civilians to preserve the integrity of the Republic: "No Soldier shall, in time of peace be quartered in any house, without the consent of the owner, nor in time of war, but in a manner to be prescribed by law." It is not coincidence that the prohibition on lodging Soldiers in private dwellings sits between the Second Amendment, which grants citizens formed in a militia the right to bear arms, and the Fourth Amendment, which says that if the government wants to search a person or his (eighteenth-century law generally forbade women from owning property) premises, the state requires either a search warrant or probable cause that the individual has committed (not will or might commit) a crime. Colonial-era Americans were profoundly fearful of the military—the "standing army"—that English kings used to "tyrannize" their subjects. Without a well-developed civilian police force, British Redcoats—again, many of whom lodged in civilians' homes and places of business—enforced the law as much



Two representative tattoos that every Redleg will recognize: Saint Barbara, the Patron Saint of the Field Artillery and the "Crossed Cannons," the Branch's insignia. (Images are from public domain.)

¹ USFAA is the US Army's only professional association that still executes musical tattoos. <https://www.fieldartillery.org/tattoo-page>.

as they defended the British Isles. After American colonists started peacefully protesting (through “radical” acts such as writing editorials and marching together in the streets, for example) Parliament’s demands that Americans pay taxes on luxury items and business transactions to pay the costs of the British Army winning the Seven Years’ War, the king sent two regiments, or about 4,000 Soldiers in total, in 1768 to garrison Boston. It was very much a gesture designed to intimidate the local populace into submission. It did not, and hopefully you now recognize the events of the autumn of 1768 as the proximate cause of the First Amendment, which protects freedom of speech, the press, assembly, and the right to petition the government for a redress of grievances. In the late 1760s and early 1770s, howls of protest about Soldiers being placed in “honest Americans” homes joined popular ditties and sermons about “No Taxation without Representation” and the “corruption” of the judiciary. British and American Whigs, as liberals were then called, argued that wealthy elites essentially bought and sold judges just as they bought and sold human property, and they intended to turn everyone in America into a slave. In short order—over the course of about five years—protest became rebellion, and rebellion became revolution. All this combined into the Founders’ defining act of genius: they determined that their army would be different than anything the world had seen since the Roman Republic (see below). Most of the Founders possessed no military experience—they were mostly lawyers, physicians, businessmen, and preachers—but they shared a common vision: their Republic’s army would defend a set of ideas—elucidated in the Constitution—vice a king or a pack of demagogues. You no doubt recall swearing (or affirming) an oath to “support and defend the Constitution of the United States against all enemies foreign and domestic...”

Back to the origins of the musical tattoo. The English word tattoo evolved from “tap toe,”

which meant “turn off the tap,” the signal to tavern keepers to stop pouring beer and serving food. Because Soldiers did not have access to dining facilities and were expected to feed themselves when in garrison, they congregated at taverns and inns to take their meals, and to spend their off-duty hours. Each evening at a specified time, therefore, company adjutants directed drummers to “beat” tap toe, which was shortened to tattoo when it was said in the rural accent of eighteenth-century Britons. Tap toe evolved into the country word tattoo because the Army garrisoned most its troops in Great Britain’s remote locales, not large urban areas where it was more expensive to lodge and feed them.

We use the word tattooing, aka putting indelible ink on one’s skin, because it sounds like a drumbeat as the needle applies the pigment to the epidermis. The video at https://youtu.be/yaTn6nE_a1U shows traditional Pacific Islander tattooing: the application of the ink clearly looks like drumming, and it produces a distinctive rhythm and beat.² Of course, Polynesians were not the first people to tattoo their bodies. It is a practice that almost all cultures share. Humans have been tattooing themselves and each other since before we began using fire or alphabets. Individuals of all classes and social strata, but especially Soldiers—Roman Legionnaires, for example, tattooed SPQR (an abbreviation for *Senatus Populusque Romanus*, the Senate and People of Rome) on their arms as the “Mark of The Legion”—have adorned their bodies with ink.³ But after CPT James Cook sailed to the South Pacific Ocean in 1768—coincidentally the same year the British Army sent troops to garrison Boston—and his crew saw Tahitians’ process for “inking” their bodies, they started using the word tattooing to describe something many of them did to each other and had done to them, both in England and in the South Pacific. The word quickly spread through first the Royal Navy’s, and then the British Army’s, distinctive language communities. Within two generations

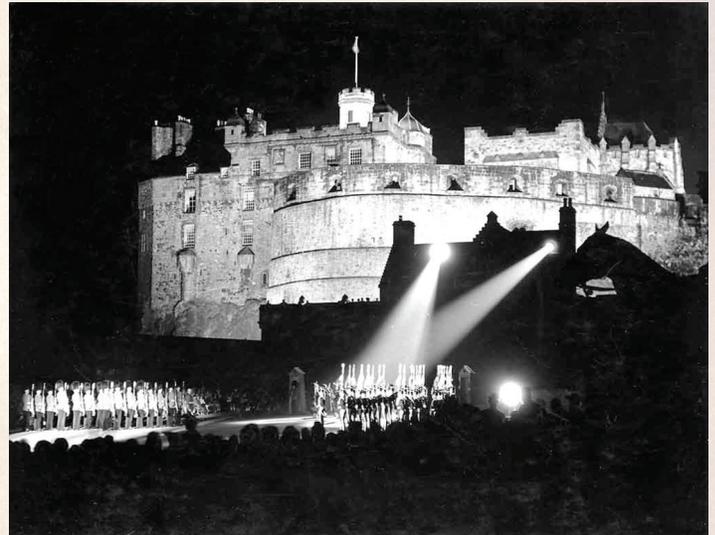
2 Coincidentally, the most recent USFAA musical tattoos have occurred in March, during Asian American and Pacific Islander (AAPI) Heritage Month. In 1992, President George H.W. Bush designated May as AAPI Heritage Month. Fans of WWE (World Wrestling Entertainment) will note that the Roman Reigns character (né Leati Joseph “Joe” Anoa’i), the “Tribal Chief,” and his followers in “The Bloodline” (Joshua Samuel Fatu, Jonathan Solofa Fatu, and Joseph Yokozuna Fatu who perform under the *noms de guerre* Jey Uso, Jimmy Uso, and Solo Sikoa, respectively, each a member of the Anoa’i family) sport extensive Pacific Islander tattoos in homage to their AAPI (Samoan) ethnic and cultural identities.

3 Unfortunately, SPQR has become “a favorite abbreviation as white nationalist.” <https://pharos.vassarspaces.net/2018/06/15/spqr-and-white-nationalism/>.

of cook's voyages, applying permanent ink to the skin became universally known across the English-speaking world as tattooing.

Meanwhile, the musical tattoo became more than issuing orders in the evening. Rather than a simple notification to tavern keepers to send Soldiers to their quarters, a tattoo evolved into a complex musical performance used for celebrations and special occasions. The British were especially keen (some still are: see King Charles III's recent coronation⁴) on pomp and ceremony. The musical tattoo—it takes musical performance and marching to a level higher than a simple parade—became a common although not daily, or even monthly, occurrence in the British Army's garrisons throughout the Asian and African empires. This occurred near the same time the British stopped lodging Soldiers in civilians' home, and it instead built barracks and "mess halls" for them across the Empire. While the Army had been comfortable putting Soldiers in the homes and businesses of Englishmen and Scotsmen in the British Isles, or Anglo-American colonists in Boston and New York, it recoiled at the notion of making its Soldiers live, eat, and work with "Natives" who were "foreigners," what anthropologists now call "cultural others." The British "segregated" their Army from local populations, whether in Singapore, or Calcutta and even Canada, and they turned to musical tattoos to give the troops on the farthest reaches of the Empire a reminder of "home." Today, the Royal Edinburg (Scotland) Military Tattoo (<https://youtu.be/oBYVmnMFMtA>) and the Royal Nova Scotia International Tattoo (<https://nstatattoo.ca/>) harken to the past, when the "the sun never sat on the British Empire."⁵ India's Navy, our United States Indo-Pacific Command or INDOPACOM ally who is immensely proud of its independence from the United Kingdom and now is part of "The Quad"

(officially the Quadrilateral Security Dialog of the U.S., Australia, Japan, and India) regularly uses a "tattoo ceremony" in a symbolic beating of drums with billeting orders for sailors and marines to proceed to their quarters.⁶



In 1949, the first modern Edinburg Tattoo (now the Royal Edinburg Military Tattoo) attracted an audience of over 100,000 viewers over 20 performances. Her Majesty Queen Elizabeth attended the final night of the production, a high honor for the British regiment that marched in the performance. (Image can be found at the Royal Edinburg Military Tattoo website at <https://www.edintattoo.co.uk/history#decade-1940s>.)

Traditions are inescapable parts of Army life. Our Army and branch heritage stretches much further beyond even the creation of the Continental Artillery in the War for Independence.⁷ Tattoos—both the musical kind and the innumerable examples that Soldiers place on their skin—are central markers to how our identity as U.S. servicemen and women has evolved.⁸ If we listen and look closely, we will see that the past, and our heritage, remains with us to this day.

4 For this highlights of Charles III's coronation, see <https://www.pbs.org/newshour/world/king-charles-iii-crowned-in-coronation-ceremony>.

5 One of the pages that cycles through the Nova Scotia International Tattoo showed that the US Air Force Drill Team intended to perform at the 2023 event. The Drill team preserves "Air Force *heritage* [emphasis mine] as the face of the Air Force." <https://www.honorguard.af.mil/About-Us/Drill-Team/>.

6 <https://www.indiannavy.nic.in/content/beating-retreat-and-tattoo-ceremony-gateway-india#:~:text=Since%20then%2C%20the%20ceremony%20of,to%20proceed%20to%20their%20quarters>.

7 John Grenier, "Field Artillery: Shield of the Continental Army," *Field Artillery Professional Bulletin* 2022 (3): 6-10, at <https://www.dvidshub.net/publication/issues/65106>.

8 In June 2022, the Army updated its regulations for skin tattoos, after an initial change to policy in 2015. https://www.army.mil/article/257828/army_eases_tattoo_restrictions_with_new_policy. The Army's view on tattoos, like many tattoos themselves, is clearly a work-in-progress.



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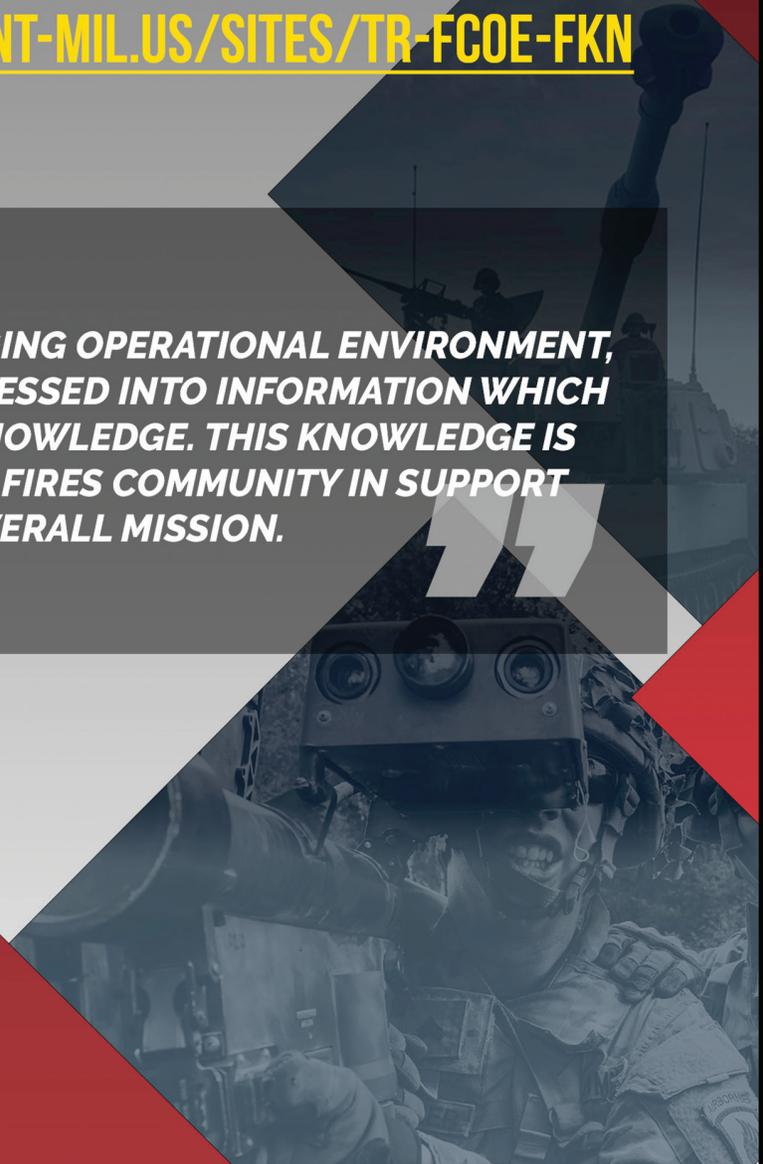
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TO STAY AHEAD OF A RAPIDLY CHANGING OPERATIONAL ENVIRONMENT, DATA MUST BE ANALYZED AND PROCESSED INTO INFORMATION WHICH IS TRANSFORMED INTO USABLE KNOWLEDGE. THIS KNOWLEDGE IS THEN SHARED THROUGHOUT THE FIRES COMMUNITY IN SUPPORT OF THE ARMY'S OVERALL MISSION.

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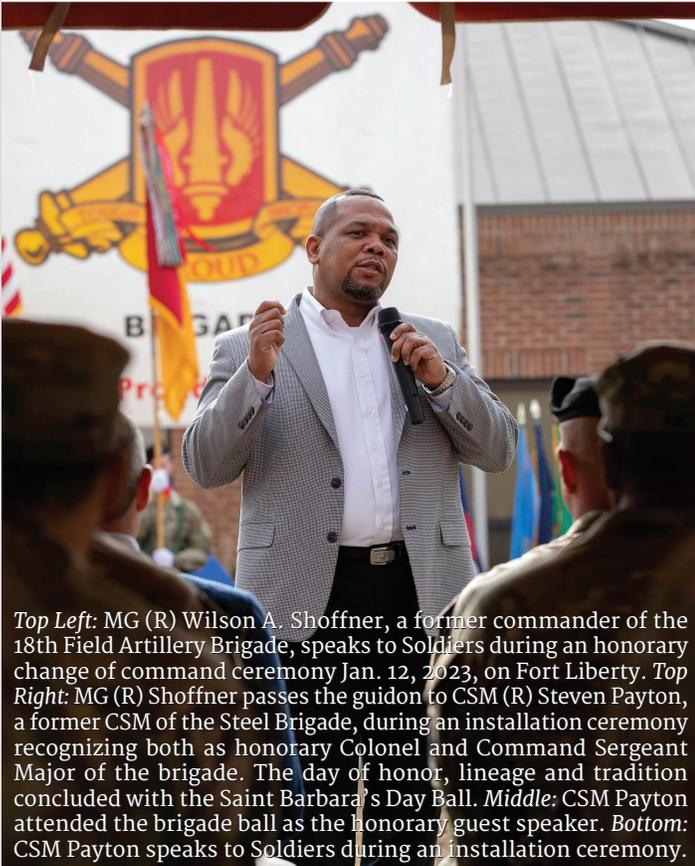


U.S. ARMY



A Day of Honor – Connecting the Past to the Present through Tradition, Memories and Experiences

SSG Erin Conway–18th Field Artillery Brigade



Top Left: MG (R) Wilson A. Shoffner, a former commander of the 18th Field Artillery Brigade, speaks to Soldiers during an honorary change of command ceremony Jan. 12, 2023, on Fort Liberty. *Top Right:* MG (R) Shoffner passes the guidon to CSM (R) Steven Payton, a former CSM of the Steel Brigade, during an installation ceremony recognizing both as honorary Colonel and Command Sergeant Major of the brigade. The day of honor, lineage and tradition concluded with the Saint Barbara's Day Ball. *Middle:* CSM Payton attended the brigade ball as the honorary guest speaker. *Bottom:* CSM Payton speaks to Soldiers during an installation ceremony.

FORT LIBERTY, N.C. – The 18th Field Artillery Brigade started 2023 off with the Saint Barbara's Day Ball – a tradition that hadn't been held since 2018 due to the Coronavirus pandemic. This annual custom honoring the artillery's patron saint came with a twist this year. Instead of just hosting a ball in the evening and recognizing current Soldiers, the 18th Field Artillery Brigade turned it into a day filled with legacy and tradition from start to finish, including recognizing the brigade's first honorary Colonel and Command Sergeant Major – a ceremony normally only held at the regimental and corps levels.

COL Jonathan Harvey, 18th Field Artillery Brigade commander at the time, knew he wanted to hold the Saint Barbara's Day Ball in 2021, but the pandemic postponed it yet another year. During that extended planning period, Harvey decided to not only honor individuals currently in the brigade with the coveted Orders of Saint Barbara and Molly Pitcher awards as per usual at the evening ball but to turn the whole day into a day where Soldiers both past and present are recognized together.

"Tying today to our history is what allows us to see where we have come from so that we can do honor to those whose shoulders we stand on," Harvey said.

After discussion with many former Steel leaders and reviewing requirements and regulation, MG (Ret.) Wilson Al Shoffner and Command Sergeant Major (Ret.) Steven Payton were chosen as the first honorary Colonel and Command Sergeant Major, respectively, of the 18th Field Artillery Brigade. Along with a formal ceremony, the two honorees returned to the Steel Brigade for PT in the morning, professional development sessions during the day and finally to the ball that evening.

"We decided if they are here, why not only hear them talk about their experiences but show them today's Soldier experience with things like H2F?" Harvey said, explaining his thought process behind the unique day. "It seemed to make sense to have

a whole day celebrating who we were and who we are and connect the two.”

For Shoffner, who had only been back to the brigade he commanded once since leaving and Payton, who hadn't been back at all, the day was surreal.

“It was great to be back around Soldiers and an honor to be recognized by the brigade,” Shoffner said.

He and Payton served as Steel 6 from 2009 to 2011 and Steel 9 from 2011 to 2013, respectively.

“Without a doubt, it was a great honor, as was my experience with the 18th Fires Brigade during my time,” Payton said. “The history of organizations is what the future of that organization is going to be built on. To know and understand what the organization has been through and been a part of and the progress it has made makes a difference to the existing and future organization.”

The two were able to see how much has changed since their time leading the organization, but almost more importantly, what has stayed the same.

“The commitment to excellence that the brigade has not changed,” Shoffner said.

Shoffner said the commitment to excellence can be seen in the effectiveness of HIMARS (high mobility artillery rocket system) right now, in Eastern Europe and specifically Ukraine. They have become the game changers they are because of the past and current leaders in the brigade having cultivated their knowledge of how to employ and utilize the weapons system so it's as effective as it is today.

Payton echoed Shoffner's statement, saying the culture and nature of those within the brigade and their team spirit hasn't changed. For both leaders, the change in the culture of physical fitness stood out the most.

“Holistic Health and Fitness has been the biggest change,” Payton said. “Seeing everyone, every day, doing everything they can to exemplify that is a testament to the leaders. Those are some of the things we pushed for when we were there and now the brigade has taken it to a whole new level.”

As the day turned to night, over 450 Steel Soldiers and family members gathered for the Saint

Barbara's Day Ball and awards continued. Soldiers in the Steel Brigade were awarded the Honorable Order of Saint Barbara. The award recognizes those individuals who stood out amongst their peers and contributed to the promotion of Field Artillery. Spouses of the Soldiers were awarded the Esteemed Artillery Order of Molly Pitcher, which recognizes individuals who demonstrate life-long commitment to support the Field Artillery community. Among the Honorable Order of Saint Barbara honorees was LTG Christopher Donahue, commanding general of the XVIII Airborne Corps, to recognize his life of service and commitment to the artillery branch as an infantry officer. As a bonus, the color guard presenting the colors at the evening ceremony was made up of the Soldiers who, just a month earlier, won the XVIII Airborne Corps Brigade Separates Best Squad Competition.

The day was a first for the 18th Field Artillery Brigade and an impactful way to start the new year. The goal is for this day to become an annual tradition for the Steel Brigade.

“The connection between today's Soldier leader to yesterday's Soldier leader is vital,” Harvey said, “and days like this help solidify that connection.”

“If we don't realize we are standing on the shoulders of those who came before us, then we have this danger of falling into the trap of ‘look what I did’ or ‘look what we did,’” Harvey said. “The Army isn't about ‘I’ or ‘We’; it is bigger than us. This is the Army's brigade and every Soldier who has served in this brigade has some part of that success.”



COL Jonathan Harvey (L), previous Commander of the 18th Field Artillery Brigade, awards LTG Christopher Donahue, Commanding General of the XVIII Airborne Corps, with the Honorable Order of Saint Barbara at the Saint Barbara's Ball Jan. 12, 2023, in Fayetteville, N.C. The 2023 Saint Barbara's Ball brought an end to a day full of honor, history and lineage.

Fort Sill Hosts Inaugural Best Redleg Competition May 6-16

By Monica Wood, Fort Sill PAO

FORT SILL, Oklahoma (May 16, 2024) — Fort Sill, home to the United States Army Field Artillery School, played host to the inaugural Gen. Raymond T. Odierno Best Redleg Competition on May 6-16.

The six-day competition showcased the expertise and skills of 35 teams of Field Artillery Soldiers in the 13B, 13F and 13J military occupation specialties on the M119 howitzer, the M109 Paladin and the M777 weapon systems from U.S. Army units around the world.

The competitors endured a rigorous six-day competition that challenged sections with various physically and branch-specific demanding artillery section and Soldier skills evaluations.

The purpose of the Army's first annual Best Redleg competition is to identify the best artillery sections from across the force and their ability to deploy, fight, and win, according to BRL Challenge organizers.

"We wanted to create an opportunity for our Soldiers to showcase their skills and dedication to the Field Artillery mission," said MG Phil Brooks, commanding general, Fires Center of Excellence

and Fort Sill. "The Best Redleg competition not only highlights the professionalism of our Soldiers but also fosters camaraderie and *esprit de corps* within the artillery community."

The competition began with an Army Combat Fitness Test, equipment transfer, and an OPORD brief.

Subsequent days included, both indirect and direct live-fire events and various section-level tasks. Competitors were graded on crew drills, target acquisition, time-on-target, rapid deployment exercises and locating and providing correct coordinates and correction to Fires.

The competition culminated with a 12-Mile ruck march ending at Fort Sill's Old Post Quadrangle with the final awards ceremony.

Each event was meticulously evaluated by a panel of expert judges comprised of seasoned artillery officers and non-commissioned officers.

The closing ceremonies drew a crowd of spectators, including senior military leaders, veterans, and family members, who gathered to



Candidates in the Best Redleg Competition conduct an Army Combat Fitness Test as part of their evaluation in the competition. The ACFT is a six-event physical fitness test; the test events are administered in the following order: 3 Repetition Maximum Deadlift, Standing Power Throw, Hand-Release Push-up, Sprint- Drag-Carry (SDC), Plank and 2-Mile Run. (Photo by Judith Oman)



The five winning teams in the Best Red Leg Competition met with Maj. Gen. Phil Brooks, commanding general, Fires Center of Excellence and Fort Sill, at Snow Hall. Pictured is the 2024, 13J Best Redleg Team from the 25th Infantry Division. (Photo by Monica Wood)

cheer on the participating teams, both in-person and online.

SGT Kamarean Stratman, a member of the winning team for 13 Bravos or cannon crewmembers on the M119 Howitzer, who is from 2nd Battalion, 2nd Field Artillery, 428th Field Artillery Brigade, expressed his pride in being part of the competition.

“It’s an honor to represent my unit and showcase the skills we’ve honed through rigorous training and dedication,” Stratman said. “Events like these not only challenge us to push ourselves further but also highlight the importance of our role in supporting ground forces.”

Stratman added he knew he was going to win and is not surprised his team did.

The five top-performing teams were recognized for their excellence and presented with trophies and commendations by Brooks.

Brooks spoke to the winning teams about how some competitors complained about all the physical events and the structure of the competition which included ruck marching.

“The physical stuff is not going to come out of this competition because the leadership is determined to push his or her section to go places they didn’t think they would or could go, otherwise, we could have come out here and did a table five certification just like we do in

the motor pool,” said Brooks. “We really would not have depicted who was the best section and the situational training exercise given combat environment, we would have been shortchanging ourselves.”

According to Brooks, the competition will become an annual event and he hopes the competition becomes a building block for something much bigger for the competitors.

“You’re out here pushing yourself and you’re hanging in and you should have in the back of your mind when you leave this week like ‘You know what? Maybe there’s an opportunity or a regiment that I’ve never thought about before,’” he said. “It’s all about pushing yourself and your career after this, not just what you did this week.”

“The events were challenging but we also had a lot of fun doing it,” said PFC Zachery Nichols, 3rd Infantry Division and a member of the winning team for 13 Bravos on the M109. “One of the things I enjoyed the most was just the camaraderie of everything. That’s one of the reasons I joined the military in the first place. Being out there with all the guys, all events, pushing each other and having each other’s back – that was probably the best part of it.”

Nichols said he also had a least favorite part.

“My least favorite part was probably the ruck march. We don’t usually do that much rucking so about mile six in there, I was staring at the ground,



Best Redleg competitors at Fort Sill participated in various challenging events, including medical proficiency tests, pugil sticks combat, and the Enhanced Physical Fitness Assessment (EPFA), demonstrating the wide range of skills critical for artillery personnel on May 13, 2024. (Photo by Monica Wood)



Thirty-five teams of Artillery Soldiers from across the Army are at the Fires Center of Excellence and Fort Sill to find out what team is the Best Red Leg team. The competition ran from May 8-16, 2024, with a variety of events to prove which team is the Best Red Leg. Participants for the competitions are in the 13B, 13F and 13J MOS’s. (Photo Credit: Monica Wood)

keeping my head down and just trying to make it to the end,” he said.

The winners of the inaugural Gen. Raymond T. Odierno Best Redleg Competition 2024 are:

13B - Cannon Crewmember:

M119 Howitzer:

2-2nd Field Artillery Battalion,
428th Field Artillery Brigade

M777 Howitzer:

2nd Field Artillery Squadron,
2nd Cavalry Regiment

M109 Paladin:

1-9th Field Artillery Battalion,
3rd Infantry Division

13F - Joint Fire Support Specialist:

The 75th Ranger Regiment

13J - Fire Control Specialist:

2-11th Field Artillery Regiment,
25th Infantry Division

The week was full of sweat and perseverance. Congratulations are in order for all the competitors for their hard work and dedication to being the *King of Battle*.

As the sun set over Fort Sill, organizers hailed the inaugural Best Redleg competition as a resounding success and expressed optimism for its continuation as an annual tradition, further strengthening the bond among artillery Soldiers and units across the Army.



The Fires Center of Excellence and Fort Sill hosted the Opening Ceremony for the first Best Red Leg Competition. The opening ceremony was held on the Fort Sill Polo Field on May 9, 2024. (Photo by Monica Wood)

Field Artillery

Professional Bulletin

**THE FIELD ARTILLERY
PROFESSIONAL BULLETIN
AND WEBSITE ARE UNDER
CONSTRUCTION!**

Our path forward is a web first/mobile friendly publication available across multiple platforms

Rolling Publication—weekly digital publication

Will continue to maintain one to two printed versions a year

Thank you to all our authors, you are what makes our publication successful and create the discourse that drives change within the Field Artillery!

KING OF BATTLE





Field Artillery

Strategy 2030

MAIN EFFORT—Master the Fundamentals: In an era of continuous transformation, the U.S. Army recognizes the imperative of mastering the fundamentals of field artillery training. The ability to deliver combat-ready formations capable of shaping the future force is essential in the modern warfighting landscape. Our main effort, “Master the Fundamentals,” touches on the core principles of shoot, move, communicate, and survive on the battlefield, emphasizing their role in strengthening the Army profession.

Shoot: Delivering accurate and timely fires is the cornerstone of field artillery effectiveness. Training in precision and consistency, target acquisition, and fire direction is paramount. Soldiers must become proficient in using advanced technologies and weapon systems to maximize their lethality while minimizing collateral damage.

Move: Artillery units must be capable of rapid deployment and repositioning to support maneuvering forces. Mobility training focuses on efficiently moving and emplacing artillery pieces, vehicles, and personnel. Mastery of these skills ensures that artillery units can quickly respond to changing battlefield dynamics.

Communicate: Effective communication is essential for artillery units to coordinate with other military branches and maintain situational awareness. Training in radio and digital communication systems and standardized procedures for relaying fire missions is crucial for successful artillery operations.

By excelling in shooting, moving, communicating and surviving, artillery units can provide critical support to ground forces and contribute to the success of military operations.

Survive on the Battlefield: Artillery units must deliver devastating firepower while maintaining survivability. Training in active and passive defensive measures, such as C-UAS and digital

signature camouflage, is vital for maintaining personnel and equipment in hostile environments.

Mastering the fundamentals of Army field artillery training is essential for ensuring the effectiveness and survivability of artillery units on the battlefield. By excelling in shooting, moving, communicating, and surviving, artillery units can provide critical support to ground forces and contribute to the success of military operations. The U.S. Army Field Artillery Master Gunner Course is a crucial tool in developing highly skilled artillery professionals who can lead their units to excellence. Continuous training and dedication to these principles are essential for the success of our field artillery forces.

SHAPING EFFORT 1—Develop Expert Redlegs: Producing expert leaders who are fit and adaptive problem solvers requires recruiting and retaining the best talent, regularly re-evaluating and modernizing training and facilities and executing assessments and evaluations at each central developmental point in a Soldier’s career. Per the Chief of Staff of the Army’s (CSA) READY ARMY Concept, the Field Artillery must establish expertise as the foundation of our Profession of Arms – this requires deepening our expertise as leaders and empowering our subordinates to do the same by creating opportunities and pathways for training. Expertise also requires mentorship and constant development, with a deliberate investment of resources to ensure subordinates understand their role and its importance to unit success.

We develop expert Redlegs by first taking care of people and building trust and cohesion within our Field Artillery formations – per the Combined Arms Center (CAC) Commanding General’s lines of effort (LOE), this is how we will steward the profession. With this foundation, combined with efforts to provide career-long assessments and modernization of professional military education (PME) and Army training, we can achieve the Fires Center of Excellence’s (FCoE) goal of developing high-performing Field Artillery leaders who possess the knowledge and skills to fight and win in large-scale combat operations.

SHAPING EFFORT 1—Develop Expert Redlegs

INSTITUTIONAL DOMAIN: The U.S. Army Field Artillery School (USAFAS) will modernize along with the rest of the Field Artillery Branch. We will transition to interactive media instruction (IMI) and advanced simulations demonstrating what “right looks like” regarding fire support planning and execution. Our branches’ new firing capabilities will exceed what is permissible in our current ranges. Snow Hall, Burleson Hall, I-SEE-O Hall and Fort Sill Noncommissioned Officer Academy (NCOA) must update their classrooms to host advanced IMI training and immersive simulations that will enable students to demonstrate proficiency in their critical tasks. Training at Fort Sill will be relevant and meet the needs of the operational force. USAFAS will design their instruction around operational force feedback, including CTC trends, center for army lessons learned, and observations in current LSCO-fought conflicts. USAFAS will establish formal mechanisms to promptly receive direct input and insert it into our curriculum. USAFAS training must be flexible and modern, consistently

measuring its graduates against the standards set by our operational force. USAFAS will prioritize talent for the training instructor and developer positions on FCoE. Placing the best talent in the school setting ensures the best artillery men and women train students. Instructor and developer positions within USAFAS will have significant meanings to future promotion boards and future assignments in the branch.

OPERATIONAL DOMAIN: Ensuring the Field Artillery remains relevant in the Force of 2030 requires the USAFAS to strengthen and maintain relationships with the operating force. As Field Artillery units in the operational force train to build proficiency in mission-essential tasks, weapons qualification and collective live-fire tasks, we must regularly re-evaluate and modernize training

and facilities to meet future threats. In doing so, USAFAS can help drive necessary change.

USAFAS must develop regular, formal feedback mechanisms between the operational and institutional forces. This will allow us to





capture and assess lessons learned from our battlefield coordination detachments (BCDs), division artillery (DIVARTYs), and Field Artillery brigades (FABs) on how they are establishing a warfighting culture, building and sustaining Field Artillery readiness and what are the impediments to achieving their mission-essential task list (METL). USAFAS can use this feedback to inform updates to our doctrine, Field Artillery unit organization, training strategies and institutional curriculum. Most importantly, feedback from the operational force is crucial to ensuring the USAFAS delivers the competent, confident and committed Soldiers and leaders our Field Artillery formations need.

SELF-DEVELOPMENT

DOMAIN: Field Artillery self-development seeks to develop agile, adaptive, and innovative leaders for our Army within a flexible, relevant, and enduring framework. Self-development ensures officers, noncommissioned officers and civilian leaders within Field Artillery formations are equipped to handle future challenges. Our Field Artillery formations will accomplish this through a self-development domain that is well-defined, meaningful and integrated into the leader development process. Properly structuring self-development will bridge the operational and institutional domains and set conditions for lifelong learning and continuous growth for all Redlegs.

USAFAS will establish leader effectiveness through assessments and create a culture of assessments throughout Soldiers' and civilian careers. Additionally, modernizing career maps will help Soldiers and civilians see their potential future adventure in Field Artillery's decisive role in LSCO. Finally, improving self-development requires re-evaluating distance learning, virtual and correspondence courses and building the necessary Soldier training products to bridge known operational and institutional gaps.

TALENT DISTRIBUTION: People define our Army and the Field Artillery, and proper distribution of talent will give the branch a decisive advantage against our near-peer adversaries in the future. Talent distribution is a commander and leader business. When done correctly, it will build progressive training, education, and experience to ensure the Field Artillery attracts and retains the best. Commanders and leaders must be able to describe the unique requirements of Field Artillery occupations along appropriate career paths and help develop their subordinates through coaching, counseling, and mentoring. USAFAS can help with talent distribution by updating DA PAMs 600-3 and 600-25 for our new Field Artillery

and Formations positions. We must also review MOS standards and ASIs to ensure proper talent distribution for future capabilities. Finally, USAFAS will review key developmental positions and timings to ensure we build expert knowledge and skills to fight and win in LSCO. Master Gunner Course: The U.S. Army Field Artillery Master Gunner Course is a specialized training program to develop subject matter experts within artillery units. This course provides in-depth knowledge and advanced skills in all aspects of artillery operations, including ballistics, fire control and maintenance. Graduates of this course become invaluable assets to their units, capable of mentoring and leading their peers to achieve a higher level of proficiency.

The number one priority remains fielding the Artillery Force for the Army of 2030, and the cornerstone of that success lies in the men and women who make up that force. Producing expert Redlegs requires investing in their professional development through the institutional, operational, and self-developmental domains while distributing talent to build expertise to fight and win in large-scale combat operations.

SHAPING EFFORT 2—Continuous Transformation: Field Artillery modernization efforts must evolve/upgrade field artillery systems synchronized across all doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy (DOTMLPF-P) stakeholders to maintain a position of relative advantage against named adversaries and win in a LSCO environment. Effective communication and exchanges between the operational and institutional forces must accompany modernization efforts.

Integrated Field Artillery Transformation Strategy: Cannon, rocket/missile/fire support systems must have redundancy and complementarity and eliminate competing solutions to common enterprise challenges.

SHAPING EFFORT 2— Continuous Transformation

DOTMLPF-P

SYNCHRONIZATION: To achieve DOTMLPF-P synchronization requires:

- Programmed and predictable Soldier touchpoints
- Timely POI development
- Deliberate and comprehensive facilities assessments
- Timely doctrine updates
- Synchronization of personnel with FA formation needs in near real-time.

DELIBERATE FIELDING

STRATEGY: Fielding strategies for new equipment must coincide with priorities for the force. Units aligned against an OPLAN/CONPLAN should receive equipment and associated training priority.

ARTIFICIAL INTELLIGENCE/ MACHINE LEARNING

INTEGRATION: New solutions should harness AI/ML and other emerging technologies to free leaders to make judgment decisions. Focus technological efforts on tasks such as:

- Track ammunition
- Present weapons pairing solutions
- Flatten kill webs to reduce sensor-to-shooter lag times

FORMATIONS

TRANSFORMATION: Formations must evolve to allow access to kinetic and non-kinetic capabilities to achieve effects across all domains. This may include altering MTOEs to create composite formations with various enablers (CEMA, IO, etc.).

PERSISTENT

EXPERIMENTATION:

Experimentation should be integrated, enduring, adaptive, reiterative and informed by enduring objectives and learning demands across the enterprise. It must utilize feedback from the force to progress across the DOTMLPF-P spectrum. The continuous transformation of the FA branch is a testament to its unwavering commitment to maintaining battlefield superiority through transformative experimentation. A vital component of this modernization effort is the tactical integration of Unmanned Aerial Systems (UAS) as forward observer platforms at the

battalion-and-below levels, marking a significant shift in target acquisition/engagement methodology. This initiative not only enhances real-time intelligence and situational awareness but also accelerates the precision and efficacy of our FA operations. By empowering frontline units with advanced UAS capabilities, the FA branch is ensuring its adaptability and lethality in the dynamic landscape of LSCO, reflecting an overarching dedication to continuous transformation.

FA modernization efforts must harness emerging technologies promptly to maintain a position of relative advantage with a focus on joint/combined interoperability, machine-enabled decision-making, and understanding of threat-based gaps to drive efforts.



SHAPING EFFORT 3–Strengthen the Profession: Professional writing is a critical component of leader development in the U.S. Army. It serves as a conduit for exchanging ideas, experiences, and knowledge, fostering a culture of continuous learning and improvement. This exchange is essential as the Army prepares for the challenges of 2030 and beyond.

SHAPING EFFORT 3– Strengthen the Profession

Developing the most professional leaders is a priority for the Army, as evidenced by the various supporting efforts to the Harding Project. As the Army looks towards 2030 and beyond, the importance of professional writing in leader development will only continue to grow, and our branch will remain at the forefront of this effort.

The Field Artillery Professional Bulletin (FAPB) and the Field Artillery Journal are vital platforms facilitating this exchange. They serve as forums for discussions among field artillery professionals. These publications disseminate knowledge about progress, development, and TTPs, cultivating a common understanding of the power, limitations, and application of Fires, both lethal and nonlethal. They foster interdependency among the armed services, contributing to the strengthening of the Army profession.

Professional writing programs within professional military education (PME) significantly develop the most experienced leaders. The professional writing programs will enhance communication skills, foster critical thinking, and promote organizational and command leadership, preparing

leaders for the multifaceted environments of modern warfare.

The Army of 2030 will require leaders who communicate complex ideas and strategies effectively. Professional writing equips leaders with the skills and knowledge to share lessons across their organizations. Professional writing connects communities of interest around shared problems and informs doctrinal development as these lessons accumulate.

Strengthening the Army profession involves building expertise through written discourse. This deliberate, continuous, sequential, and progressive process, grounded in Army Values, is integral

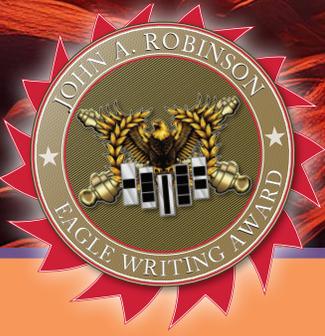
to leader development. It grows Soldiers and civilians into competent and confident leaders capable of decisive action. Leaders must be experts in their fields, capable of coordinating, synchronizing, and integrating joint and Army fires. Simultaneously, be imaginative, agile, and adaptive leaders of Soldiers.



INFORMATION DOMINANCE:
FUTURE TARGETING
AT THE
TACTICAL EDGE OF BATT'

By CW2 Frank Gagliardo





Illustrations created with AI software

BEYOND DESTRUCTION:

Bridging the Gap in Artillery Effects Expertise

By WO1 Zachary A. Zayac

In contemporary Large-Scale Combat Operations (LSCO), a significant gap in the tactical application of artillery exists due to a widespread lack of understanding among military professionals of surface-to-surface munitions effects. This deficiency hinders the effective use of artillery capabilities crucial for achieving tactical objectives. To bridge this knowledge gap, it is imperative to enhance the training, understanding and expertise of designated subject matter experts, specifically the 131A Field Artillery Targeting Technicians. The addition of an advanced weaponeering course, focused on the effects of artillery, offers a pathway to align operational execution with doctrinal expectations and improve tactical level targeting. A deep understanding of munitions effects is essential for leveraging artillery's full potential in LSCO, ensuring that military operations are precise and efficient.

Why this is a gap

Major General Snow wrote about the importance of understanding artillery effects as a pivotal component to military success in 1911 (Snow, 1911). Additionally, FM 3-60 Army Targeting lists “effects-based” as one of the key principles of targeting. Effects represent the intended outcome of artillery engagements and are used by the Joint Weaponeering Software (JWS) and the Advanced Field Artillery Tactical Data System (AFATDS) to calculate munitions necessary for achieving that end state based on several factors. These systems use complex statistical calculations based on probabilities and advanced computer modeling to arrive at the necessary rounds needed to achieve those effects (Driels, 2020). However, at the tactical level these systems are only intended to provide planners with a confidence measure for a single engagement (JTTCG/ME, 2016). The effectiveness of these calculations depends on the computational power of the system, data available and the operators understanding of the tactical situation when engagements will occur including location error, area versus point targets and meteorological data. This variability in outputs across systems and operators stems from the uncertainties in tactical needs and the inefficiency of AFATDS weapon pairings compared to JWS (Thompson, 2018). To expedite and further simplify this process, the use of pre-computed weaponeering databases and adjudication tables are used for tactical products and decision-making, misrepresenting the rounds required, wasting

resources and potentially eroding commanders' confidence in artillery effectiveness. This issue is exacerbated when training relies on these adjudication tables, creating unrealistic expectations to “win with fires” at training centers, not based on accurate weaponeering calculations (Holm, 2022).

Modern artillery, utilized in Ukraine, has been proven to be more effective than the artillery of historical LSCO conflicts, particularly due to its accuracy and precision munitions (Hinton, 2023). While destroy, neutralize and suppress remain the standard effects for JWS calculations and cannon doctrine TC 3-09.81, this categorization is reductive compared to the 23 tactical/targeting tasks and 44 intended effect outcomes described in FM 3-60 Appendix C. Understanding how artillery can be used to achieve most of the 44 targeting outcomes at the tactical level requires a deeper understanding of the technical mechanisms of artillery effects. This includes blast and fragmentation effects, aimpoint manipulation or sheaf selection and the wide variety of shell-fuse combinations available. LSCO will require staff to interpret desired effects to better utilize weaponeering software when appropriate, ensuring the artful application is grounded in this well researched science whenever feasible. However, due to the dynamic nature of tactical level operations, that weaponeering process can be prohibitive. A depth of knowledge of the inherent effects will provide staffs at these echelons more flexibility, resources and effectiveness with artillery.

Proposal to address this gap

Introducing an advanced munitions effects course to supplement the current 40-hour weaponeering course, addresses the critical need for an expanded understanding of artillery's operational capabilities, focusing on the detailed mechanics of artillery effectiveness, the vulnerabilities of specific enemy materials and the intricate use of shell-fuse combinations. By drawing on extensive research and practical insights into artillery, the course can be designed to enhance the operational effectiveness of military leaders, making this a valuable addition to the professional development of artillery personnel. The adoption of such courses by other nations and sister services, like the Air Force and Navy courses for their munitions, underscores

the global recognition of the importance of advanced weapons effects training (Personal communication).

The aforementioned course should be added to the current precision fires courses at the Army Multi-Domain Targeting Center and be developed in collaboration with the Joint Technical Coordinating Group for Munitions Effectiveness (JTTCG/ME) and other key government and non-governmental entities, as well as industry partners. This can have the same prerequisites and instructors as the current weaponeering course minimizing time to implement. The JTTCG/ME already offers a similar course focused on air-to-surface munitions called the Joint Munitions Effectiveness Manual methodology course and adapting this course for surface-to-surface munitions would be seamless as artillery effects are well researched and documented. Key to the curriculum is a deep dive into the principles underlying target vulnerabilities, blast fragmentation pattern and how artillery can be applied to efficiently compromise targets. Integrating the theoretical knowledge with practical demonstrations, videos and even simulations, the course will guide participants through the complex dynamics of blast waves and shrapnel dispersal, emphasizing the selection of munitions based on the specific targets that will be engaged. Finally, this course can cover non-lethal artillery effects such as cratering to delay, obscuration to degrade, fires to deceive or divert and its psychological effects.

While all artillery professionals would benefit from such a course, the 131A Field Artillery Targeting Technicians should be the focus of such advanced study. These professionals are charged with being subject matter experts in artillery and the targeting process. Their role, highlighted throughout the War on Terrorism, has proven their abilities in targeting and target development (Rios, 2023). The proposed expansion of their effects knowledge equips them to better assess threat vulnerabilities and select and prioritize targets in alignment with the entire targeting process and resources available. This evolution of the 131As' role, mirrors the development of the current weaponeering course in 2010, which anticipated the growing necessity for specialized expertise in effects and coincided with their shift from radar technician (Fensler, 2016). Enhancing 131As' understanding will enable tactical commands to

fulfill all of the targeting principles and provide options to achieve all targeting effects with artillery.

This advanced knowledge better equips staffs to leverage computational tools effectively when time and circumstances allow, while also providing the expertise to make informed, rapid decisions when reliance on technology is restrictive. Such an approach ensures that tactical level targeting is not only grounded in science, but also remains versatile in the face of fluctuating battlefield dynamics and resource constraints. By marrying the depth of subject matter expertise with a strategic use of computational resources, commanders can optimize targeting decisions to exploit opportunities, converge effects and mitigate challenges in real-time, whether through calculation with JWS and AFATDS or the application of experience by educated subject matter experts.

Conclusion

Addressing the critical gap in the understanding of all surface-to-surface munitions effects within LSCO is paramount for tactical targeting and the success of military operations. Enhanced training and a paradigm shift towards a deeper, more nuanced comprehension of artillery effects—including both lethal and non-lethal outcomes—are essential. Such a level of expertise necessitates the development of an advanced weaponeering course that goes beyond mere software use, aiming to bridge the gap between theoretical knowledge and the complex realities of modern combat. Such educational advancements should particularly focus on the 131A Field Artillery Technicians, who play a pivotal role as subject matter experts in artillery and targeting. By expanding their knowledge of effects, these technicians will be better equipped to advise commanders, ensuring that artillery is used effectively and efficiently. Tactical level targeting in LSCO will demand an expert understanding of artillery to leverage precision fires, minimize collateral damage and fully unleash artillery's potential to achieve tactical objectives. The proposed courses will not only enhance the effectiveness of current operations and training but ensure that the military remains adaptable and capable in the face of evolving global threats.

WO1 Zayac is currently serving as a Targeting Officer for the 1st Multi-Domain Task Force at Joint Base Lewis-McChord, Washington. He is committed to enhancing the dialog around the science of the Fires war fighting function and military operations by bridging the gap between technological insights and practical application, ensuring that strategies are both scientifically grounded and operationally effective.

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I Found What You're Looking For:

Why company grade officers should be fighting to come teach at the Field Artillery School

By MAJ Destry "Sam" Balch

MY role as a Field Artillery (FA) Basic Officer Leader Course (BOLC) Gunnery instructor began in the summer of 2022, following my assignment as a howitzer battery commander in the 82nd Airborne Division. For my broadening time, I wanted to effect lasting change in the FA Branch in the most influential capacity possible.

1-30th FA Battalion (BN), responsible for the education of all newly promoted FA lieutenants and captains, is home to the largest concentration of 13A company-grade officers in the Army. Throughout my time at Ft. Sill and intermediate level education (ILE), I spoke to several captains career course (CCC) students and post-command FA officers who felt they were missing something from their time served in the Army. I know where to find it.

You feel a lack of professional fulfillment: that you don't matter in the grand scheme of the Army and that FA officers should be more technically and tactically proficient.

Most officers define professional fulfillment as making a positive, enduring and profound organizational change. It can be demoralizing as a junior officer, even as a battery commander, when we feel we cannot influence the positive difference in the operational force we think we are capable of. Being a gunnery instructor at the Field Artillery School presents a unique platform to institute positive and lasting change that ripples throughout the entire Army. As gunnery instructors, we constantly innovate and improve tactical procedures, directly influence curriculum development and are vital to updating doctrine. If we identify a creative or better way to teach, train, or provide a better tactical solution for a problem in the force, we are the ones with the opportunity to implement that change. By fostering a culture of creativity and continuous improvement, gunnery instructors help shape a more capable and adaptable artillery force, vital in an era that edges closer toward large-scale conflict. If you want to work in an organization where you have the license

to effect immediate and positive change for the branch, I promise you it is here.

Officers also define professional fulfillment in terms of developing others. At its core, our primary mission as gunnery instructors is to educate and train new lieutenants in the essential tasks and doctrine, they need to be successful artillery officers for the operational force. The Army also charges us with professionally developing them into the leaders our future Soldiers need and deserve. Every FA officer in the Army comes through B Battery, 1-30th FA BN and every FA officer, no matter their age or distance from their profession, can recall their gunnery instructor's name. The potential impact we have in the professional development of new FA officers is immeasurable and if we genuinely believe the Army deserves the world's best leaders, it is our moral obligation to influence their development as early as possible. If you think that officers don't know enough about property management, tactical implementation of mortars, how to conduct platoon-level training management or any other shortfall you've identified in the force, you have the time, resources and support at the FA School to fix it. If you want to be in the best position that molds future leaders into the educated professionals you believe they should be, I promise you it is here.

Finally, officers also define professional fulfillment in terms of their own development. As an instructor, I was surrounded by the brightest minds the community has to offer. When I started my certification and on-ramp as a gunnery instructor, the tactical and technical prowess within USAFAS was inspiring. Experts in cannons, rockets, radars, mortars, joint fires and targeting share a common roof and the Gunnery Instructor Certification Program ensures that it produces the most professional and proficient officers. The institution taught me how to teach, how to learn and most importantly, it filled the unknown fires knowledge gaps to make me a more lethal fires

officer. If you are still looking for the professional fulfillment you expected in the Army and want to be at the place that will make you a more tactically and technically proficient fires officer, I promise you it is here.

Your unit's operational tempo overwhelms your time and you feel a significant lack of work/life balance.

The Army's mission is ever-growing and our numbers are ever shrinking, increasing the workload and responsibility on individual Soldiers and leaders. Our operational force is spread thin and has variable stability, predictability, or flexibility in our day-to-day operations, resulting in a tumultuous work/life balance. In contrast, day-to-day as an instructor at the FA School could not be more predictable. As an instructor, I knew precisely which days and classes I would teach down to the minute and room number at least three months out. When rare scheduling conflicts occurred and I needed to prioritize some aspect of my personal life over my instruction, my peers and supervisors were more than accommodating to find a solution that worked for everyone. The predictability and flexible schedule within the schoolhouse allowed me to grow relationships with family and friends that I had missed for nearly eight years. If you want the predictability and space to plan your personal and professional life, I promise you it is here.

Being a gunnery instructor, I completely redefined my relationship with time. Most weeks, I only instructed for four out of five days, had a door-to-door commute of less than ten minutes and only spent a handful of nights in the field away from my family. For the first time as an officer, I did not feel like I was constantly running behind on tasks or glancing at my watch to triage my schedule and ensure I made my next hit time. It is a typical testimonial from instructors that they finally have the time to pursue their hobbies, get their pilot's license, or take the time and recover from years of hard service to the Army. If you crave the ability to redefine your relationship with time, I promise you it is here.

In conclusion, serving as an FA BOLC gunnery instructor has given me the greatest fulfillment I have ever experienced in the Army. It gave me the time and predictability to reenergize my personal life and redevelop the relationships with my



Background, previous page: FA BOLC Class 08-22 firing illumination projectiles at Firing Point 178 as a part of Redleg War, the culminating training event for all FA BOLC students. *Above:* LTG (Retired) Dave Valcourt with FA BOLC Gunnery Instructors in 2023. LTG Valcourt was a FA School Gunnery Instructor in the early 1980s. *Below:* FA BOLC Class 03-23 students conduct a Combined Arms Rehearsal as a part of Redleg War.

friends and family. It gave me the opportunity to develop the next generation of officers in all the ways I felt our branch needed to be improved. It gave me the feeling that I was leaving the FA School a more lethal fires officer and that what I did truly mattered. If this is something you're looking for but cannot seem to find, I promise you it is here.

MAJ Destry "Sam" Balch is a student at the Naval War College – College of Naval Command and Staff. He previously served as an FA BOLC Gunnery Instructor at the U.S. Army Field Artillery School. MAJ Balch has served tours in support of OPERATION SPARTAN SHIELD, OPERATION ATLANTIC RESOLVE and OPERATION INHERENT RESOLVE. His previous positions include Battery Fire Direction Officer (3/4ID), Platoon Leader (3/4ID), Battalion Fire Direction Officer (3/4ID), 4ID DIVARTY Fire Control Officer, Brigade Fire Support Officer (2/82 ABN), Battalion Fire Support Officer (2/82 ABN) and Howitzer Battery Commander (2/82 ABN).

Demystifying Desired Effects

By CW3 David Brown

Commander’s guidance drives Targeting: The Decide, Detect, Deliver and Assess (D3A) process. Clear guidance — comprised of what targeting must achieve when, where and why — has cognitively clarifying downstream effects on the entire targeting team. It determines high-payoff targets (HPTs), fire support tasks, (FSTs), Priority Intelligence Requirements (PIRs), the collection plan, battle damage assessment (BDA) requirements, fire orders, asset allocations and nominations to our higher headquarters, among other things. Yet, translating commanderg’s uidence into concrete attrition goals we can meaningfully measure is a place where staffs routinely struggle. Few rotational units at the National Training Center (NTC) identify the force ratios they need to achieve or how much of the enemy they need to affect in the deep in order to effect subordinate success in the close. Turning a commander’s guidance into specified desired effects requires the staff to qualify and quantify the specific enemy formations and functions they wish to target.

Commanders have a range of terms to choose from when formulating their targeting guidance; ATP 3-60 lists 14 terms on pages 1-2 and 1-3. See below for a summarized list:

ATP 3-60 Desired Effect Terms	
Deceive	Military leaders attempt to mislead threat decision makers by manipulating their understanding of reality.
Defeat	Defeat is a tactical mission task that occurs when an enemy force has temporarily or permanently lost the physical means or the will to fight.
Degrade	To degrade is to reduce the effectiveness or efficiency of a threat.
Delay	To delay is to slow the time of arrival of enemy forces or capabilities or alter the ability of the enemy or adversary to project forces or capabilities.
Deny	Denial operations are actions to hinder or deny the enemy the use of space, personnel, supplies, or facilities.
Destroy	A tactical mission task that physically renders an enemy force combat ineffective until it is reconstituted.
Destruction	Destruction renders a target out of action permanently, or ineffective for a long period of time, producing 30-percent casualties or materiel damage.
Disrupt	A tactical mission task using direct and indirect fires, terrain, and obstacles to upset an enemy’s formation or tempo, interrupt the enemy’s timetable, or cause enemy forces to commit prematurely or attack in a piecemeal fashion
Divert	To divert is to turn aside or from a path or course of action
Exploitation	An offensive task that usually follows a successful attack and is designed to disorganize the enemy in depth.
Interdict	A tactical mission task where preventing, disrupting, or delaying the enemy’s use of an area or route.
Neutralize	A tactical mission task that results in rendering enemy personnel or materiel incapable of interfering with a particular operation.
Neutralization	Neutralization renders a target ineffective for a short period of time, producing 10-percent casualties or materiel damage.
Suppress	A tactical mission task that results in temporary degradation of the performance of a force or weapons system below the level needed to accomplish the mission.

The key point to remember about targeting task terminology — despite our doctrine conflating desired effect terms with types of artillery fire,

tactical tasks, defeat mechanisms and Field Artillery specific computational effects jargon that varies from maneuver and joint doctrine — is that the commander’s guidance applies to the total target taxonomy: this is to say, individual target elements and targets; target components; and, finally, target systems. This target taxonomy roughly corresponds to the three component elements of BDA and forms the doctrinal basis for quantifying and qualifying specified desired effects in terms of enemy formations and functions. This is why the best BDA is more than just a numeric rundown of destroyed systems and includes functional damage and target system assessments; the latter two assessments detail remaining enemy mission capabilities, reactions and counteractions to friendly targeting efforts.

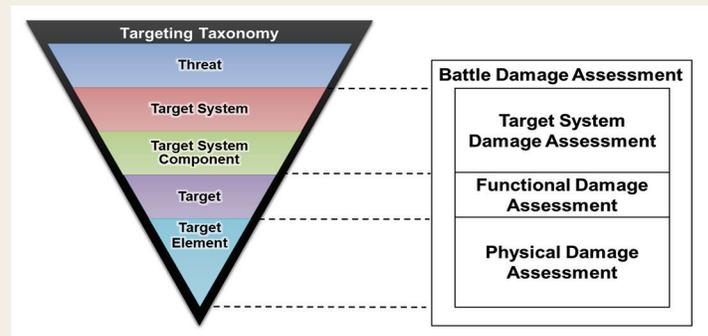


Figure 1: Target Taxonomy correlated with BDA elements: adapted from JP 3-60 page II-6

Therefore, simply listing an effect term (destroy, neutralize, or suppress, for example) in the desired effect column of an attack guidance matrix (AGM) and stopping there is not enough. Units must ensure that those terms match the effects expressed by the commander or are the effects required for the success of the friendly mission relative to the total target taxonomy. In short, the targeting plan should include specified attrition goals against specific targets by target system or target category. Even at the brigade, where targeting is less formal and resourced than it is at higher echelons where Operations Research/Systems Analysts (ORSAs) reside, the staff can still identify, establish and enumerate required shaping goals according to the commander’s battlefield framework. The targeting team should be able to determine desired force ratios from threat, situation, or event templates in the military decision-making process (MDMP) via relative combat power analysis (course of action development) and war-gaming (course of action analysis).

Force Ratio (Friendly: Enemy)	Typical Mission
1:7	Delay
1:3	Defend (prepared)
1:2.5	Defend (hasty)
2.5:1	Attack (hasty positions)
3:1	Attack (prepared position)
1:1	Counterattack (flank)

Typical planning force ratios: adapted from ATP 2-01.3 page B-9

During targeting working groups (TWGs), if we decide our HPTs in a fashion that resembles an abbreviated or informal war-game (action—reaction—counteraction), then it should be a simple verbal matter of asking the S2 and S3 representatives at the end of a “turn” what degree of attrition or strength percentage reduction is necessary in a target system or category to render it combat ineffective or reduced to the level desired by the commander, keeping in mind the goals of favorable force ratios and enabling success for the friendly course of action’s tactical tasks.

Critical event	Defend OBJ Cubs
Sequence number	1
Action	TF 1 (Main Effort) defends Razish (OBJ CUBS)
Reaction	Enemy Mech Infantry Company (MIC) made up of 6 T-90s and 12 BMPs counterattacks from Strawberry Fields
Counteraction	CAS and AAA Neutralize enemy company in Strawberry Fields
Assets	CAS, AAA, FA BN, MLRS, armed Grey Eagle
Time	H+12 to H+36
Decision points	DP 3a and 3b
Commander’s critical information requirements	Location of enemy armor reserve west of PL Gene
Control measures	AXIS of Advance 1, ACA 1, and support by fire position 1
Remarks	Destroy 6 T 90s to reduce the MIC by at least 30%

Figure 2: Notional Action, Reaction, Counteraction Sequence

This is how we might determine, for example, that we need to destroy six T-90s and nine AT-5 positions of the 801st Brigade Tactical Group’s (BTG’s) maneuver forces in vicinity of Strawberry Fields by D Day plus 2 after the seizure of an objective in order to defend it. Regardless of the phase, critical event, or Air Tasking Order day (ATO), specificity makes “shaping” more than a buzzword and allows us to tell the commander how we plan to meet his intent.

HPTL			AGM			
PRI	CAT	HPT	When	How	Effects	Remarks
1	ADA	1. 2S6M / Hot Shot Radar 2. ZSU 23-4	I	ARTY MLRS CAS EW	Destroy	1. Destroy (K-Kill) 6 2S6Ms and 2 ZSU 23-4s of the 801st iwo Strawberry Fields to enable aerial freedom of maneuver for X-XX CAV
2	FS	1. 2S19	I	ARTY MLRS CAS AAA	Neutralize	1. Neutralize (F-Kill) 8 2S19S of the 801st iwo Strawberry Fields to enable X-XX AR defense of Razish and freedom of maneuver from Razish to Ujen
3	MNVR	1. T90 2. AT-5 Battle Position	A/P	CAS AAA MLRS ARTY	Destroy	1. Destroy (F-Kill) 6 T90s and 9 AT-5s of the 801st iwo Strawberry Fields to enable X-XX AR freedom of maneuver to Brown & Debnam pass

Figure 3: Example Attack Guidance Matrix with desired attrition goals in remarks

In fact, this is how effective units translate their commander’s desired effects into specified goals. They determine which and how many high value targets (HVTs) in the enemy order of battle (EOB) need to become HPTs according to the friendly scheme of maneuver, tactical tasks and commander’s desired

end state. Determining what to shape where and when by priority constitutes condition setting before the friendly action and orients the targeting team on achieving effects before subordinate unit direct fire contact. It may be a bridge too far for anyone at a brigade level TWG to whip out a Correlation of Forces and Means (COFMs) calculator, but the targeting team can still prompt the S2 for enemy strength assessments and threat capabilities by warfighting function by zone as they are deciding their HPTs. The TWG is one of the few places where the staff can plan condition setting for subordinate units. As such, it is imperative that the staff qualify and quantify the commander’s desired effects against enemy formations and functions, turning them into tangible attrition goals.

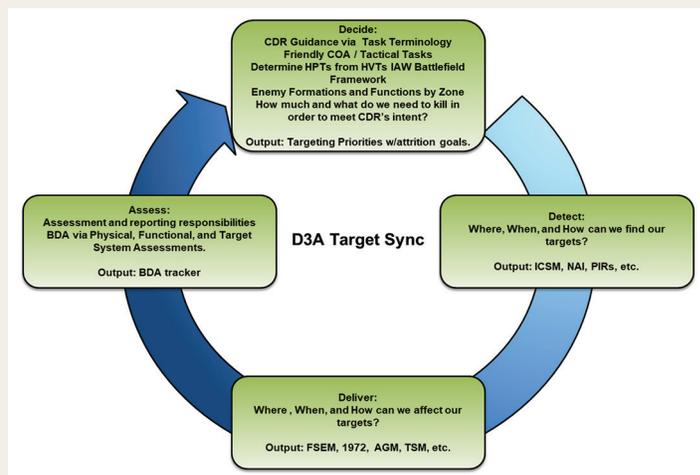


Figure 4: Example D3A sync

Effective targeting guidance tells the team what it must do when where and why. The staff owes the Commander how it intends to meet his intent. Hopefully, this paper provided illustrative examples of how to do just that during MDMP and TWGs and helped demystify desired effects.

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Static to Strategic: Re-Learning Shoot and Scoot

By SSG Robert Chambers

For nearly the past two decades, United States Central Command (CENTCOM) deployments for Rocket Field Artillery have been arriving at the forward operation base finding a covering to park the launcher. If a preset one has already been established and used by the last units, the base was there and standing-by to receive missions in a building named “HIMARS House.” Years of rotating different units in and out of the same operational areas utilizing the same hides, pre-set firing points and reload points has made the Rocket Field Artillery stagnate during counterinsurgency (COIN) operations. With the Army’s focus shifting to Large-Scale Combat Operations (LSCO), we need to return to doctrine and re-learn how to shoot, move and communicate in a true near peer conflict.

To plan and conduct a Field Artillery move is in the artillery tables at the platoon level, but often once a unit has deployed to support the Global War on Terror, the highly mobile is removed from High Mobility Artillery Rocket System (HIMARS) as the launcher is rolling between the hide site and firing point. With the conflict in Europe, it is now more vital and prevalent than ever as a force to be more mobile as possible. With the capabilities to be off the firing point before the rounds even impact the target, it is imperative that units train to move away from the firing point and on to the next hide area, away from where any counterfire will impact. Ukraine has been utilizing HIMARS to their max ability through conducting raids to range targets then quickly moving to their next op area before counterfire comes in.

Mobility is a crucial factor in ensuring the survivability of launcher crews. By having the ability to move quickly and efficiently, these artillery systems gain a significant tactical advantage on the battlefield. Stationary artillery units become easier targets for enemy reconnaissance and surveillance efforts. By continuously moving, launcher systems make it challenging for the enemy to detect and to track them effectively. Their mobility allows them to blend in with the surroundings, to utilize cover and concealment and to maintain a lower profile, reducing the risk of being detected by enemy sensors and intelligence assets.

Many of the threats to launcher systems come from not being mobile enough. The newest example of these threats is unmanned aerial systems (UAS); they pose a

growing threat on the modern battlefield. UAS can be employed by adversaries to locate and monitor launcher units, potentially directing indirect fire assets towards them. UAS may also be armed with explosive payloads, making them a direct threat to launchers and other critical assets both a means to find locations and as a weapon delivery system.

It is vital for section chiefs to learn how to properly move within the platoon operational area and immediately jumping internally to their next hide site after each mission. They should avoid getting into the habit associated with artillery table live fires of staying on the firing point with the LMs in the air, waiting on the command to stow. Stowing and moving is part of the launcher artillery tables and should be second nature to launcher crews, but due to many factors of the live fire qualification and dry fire rehearsals, it has become common to wait for the command to stow the LM even during the other tables and force on force training. This leaves the launcher and its crew in the open on the firing point exposed to ground, air and counterfire attack. These bad habits that are being instilled in the crews can have deadly consequences in a LSCO environment. Mobility is a crucial factor in ensuring the survivability of HIMARS and Multiple Launch Rocket System (MLRS) systems.

The way forward is to stop treating all fire missions during artillery tables V and VI as “administrative shoots” and to have moving the launcher after missions practiced at the crew level more. The only acceptable reason for not moving after firing is if there is a firing incident, such as a rocket or a missile is observed as unsafe, so that an inspector can come down and see where the fault of the incident lies. With MLRS and HIMARS, the checks can occur in the hide away from the firing point on the Gunner Fire Control Panel. A recent National Training Center (NTC) rotation, a new platoon standard operating procedure (SOP) was made before heading out to the box to counter the UAS threat. Changing locations frequently and at the will of the section chief within the operational area of the platoon had significant results, leading to zero loss of launchers for the entirety of the rotation for the platoon that implemented survivability moves into their SOP.

Within the platoon, the section chiefs made the call of when to move between and create new hides based on how long the launcher was in one spot for

a while or once a UAS report was heard over the net. The combination of moving after firing and constantly remaining mobile significantly enhances the overall survivability of the launcher crews. By reducing the time spent in one location and making it harder for the enemy to pinpoint and track their position accurately, these systems increase their chances of evading enemy fire that improves their survival rates during the force-on-force exercise. By moving quickly, launchers disrupt the enemy's targeting process. The short duration between firing and relocation reduces the window of opportunity for the enemy to observe the launch signatures, calculate firing positions and respond effectively.

The most glaring issues with the reclaimed mobility of the launcher was the other half of being a 13M, the ammunition sections. The ammunition sections are attached to the firing platoon in order to have a small yet essential resupply of launch pods containers (LPCs) in the Platoon operation area for quick reloading. The Ammunition Sections utilize Heavy Expanded Mobility Tactical Trucks and Heavy Expanded Mobility Ammunition Trailers (HEMTTs and HEMATs), these truck and trailer combos are slow when it comes to getting the LPCs loaded and off loaded. A well-trained crew can upload all eight LPCs the HEMTT and HEMAT are capable of carrying in about thirty minutes, but that is a long time in the open on the ground working the attached crane and running all the straps needed to secure the LPCs to the bed of the vehicles. These crews faced the same threats as the launchers they support and crew drills were vital in ensuring the platoon stays as mobile as possible. A well-trained and capable ammunition section can set the place for a platoon's ability to maneuver.

In order to effectively train how we fight; units should step back and see what is neglected when it comes to getting ready for LSCO. Twenty years of COIN operations has given a lot of Soldiers plenty of experience but not applicable experience when it comes to a near-peer threat. The next fight may be one of large-scale maneuvering, a stark difference from the way we have been fighting in the past. Being able to tactically move while maintaining communication and firing capability will greatly increase the effectiveness and survivability of Rocket Field Artillery units that may find themselves in these future conflicts.

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Photos courtesy of U.S. Army

Reorganizing for Intelligence Success: The Case of DIVARTY

By CPT Raymond M. Ferris

Abstract

Division artillery's (DIVARTY) intelligence section is unable to self-sustain itself as the division's premier intelligence cell in support of targeting without additional personnel or equipment. With only limited intelligence equipment and a lack of organic maintenance support for intelligence systems, division artillery risks being unable to provide the timely and accurate intelligence necessary to satisfy the priority intelligence requirements of brigade or division. To prevail in the division's deep fight and shape operations for the maneuver elements, a change in the intelligence focus for DIVARTY is necessary to increase the lethality of the Army's divisions. By providing multiple intelligence fusion server (IFS) stacks, 35T (Military Intelligence) personnel positioned within the DIVARTY and cross training the most capable Soldier or senior 35F (Intelligence Analyst) on intelligence systems maintenance and integration, DIVARTY can provide a robust response to our nation's enemies.

Keywords: division artillery, intelligence, deep fires, S2

Statement of the Problem

The DIVARTY intelligence section is unable to self-sustain itself as the division's premier intelligence cell in support of targeting without additional personnel or equipment. With only limited intelligence equipment and a lack of organic maintenance support for intelligence systems, division artillery risks being unable to provide the timely and accurate intelligence necessary to satisfy the priority intelligence requirements of brigade or division. When an intelligence system fails, DIVARTY is entirely reliant upon the division G-2 for support, which requires significant coordination as DIVARTY is not cleanly co-located with the division headquarters. This creates gaps in intelligence capability and leads to a desynchronization of intelligence with division operations.

The Division Artillery

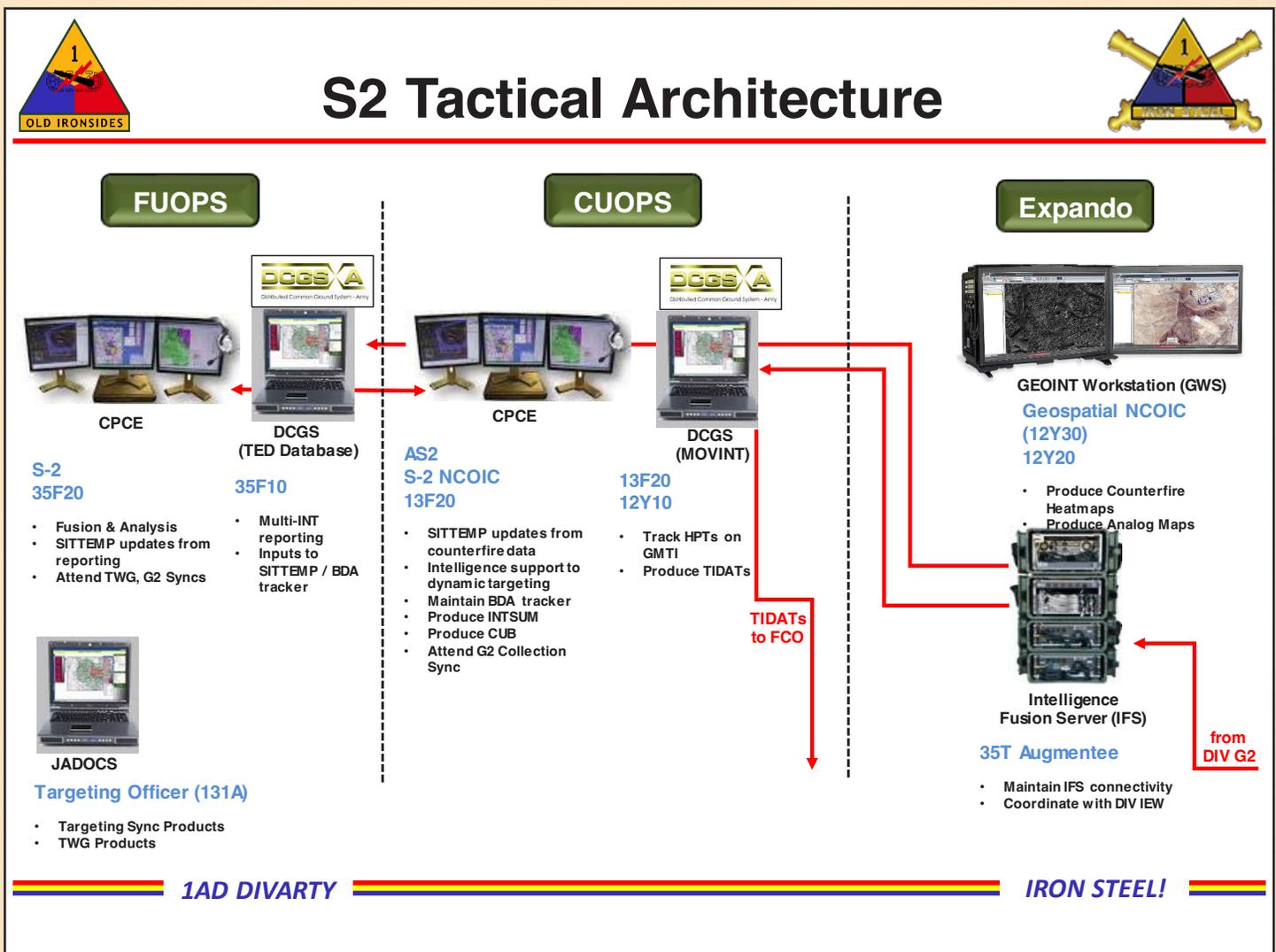
As the Army progressively moves toward a more large-scale combat operations-oriented force posture, the need for capable long-range fires units has become increasingly vital to the success of DIVARTY's operations. According to the U.S. Army, the mission of the DIVARTY "is to provide long-range precision fire support capability to the commander. DIVARTY coordinates, integrates, synchronizes and employs fires to achieve the division commander's objectives" (Department of the Army n.d.). It is responsible for the division's deep fight. But to achieve this success, DIVARTY requires an effective and robust intelligence section.

The DIVARTY S-2, acting in a similar role as that of a brigade S-2, is essential for the success of that section. The S-2 is responsible for the construction, development and dissemination of intelligence focused on enemy fires while also providing intelligence to support effective

targeting. Tailoring products to fit the specific mission set of a unit is standard procedure for the S-2 staff. DIVARTY, however, is distinctive in that it is a functional brigade that operates essentially as an extension of the division headquarters. It has its own brigade commander, but currently with personnel the size of a battalion.

DIVARTY vs Brigade Combat Team

The standard brigade combat team (BCT) relies on its organic military intelligence company (MICO) for intelligence support. Specifically, it emphasizes the services of a 353T, an intelligence systems maintenance and integration technician (<https://recruiting.army.mil/ISO/AWOR/353T>.) This Soldier is the warrant officer equivalent of a 35T, a military intelligence systems maintainer and integrator (<https://www.goarmy.com/careers-and-jobs/career-match/signal-intelligence/languages-code/35t-mi-systems-integrator.html>.) A standard brigade combat team has one 353T, one 35T30



(E-6), two 35T20s and five 35T Soldiers (E-4 and below) per the modified table of organization and equipment (MTOE). This accounts for a total of nine 35T personnel to provide support to the intelligence war fighting function within the brigade.

The DIVARTY has zero slots on its MTOE for any type of intelligence systems maintainer or technician. The same is seen with combat aviation brigades and sustainment brigades. However, it is crucial that the DIVARTY integrates 35Ts due to the direct mission set of supporting the division's

Division, DIVARTY faced during its rotation to the National Training Center (NTC) in September 2023. The S-2 section had a very knowledgeable noncommissioned officer (NCO) on intelligence architecture, however this NCO did not have administrative rights on the singular IFS stack and therefore could not provide a full solution to the issue of IFS stack failure. This forced the unit to await divisional support, which was already facing issues with their own stacks in addition to limited bandwidth on manpower. This resulted in an extreme delay producing an accurate and updated

When intelligence systems fail at division and DIVARTY, maintenance support is over-extended thus significantly eroding the ability to win the deep fight.

maneuver elements. This lack of manpower and equipment dramatically impacts the S-2's ability to provide the DIVARTY commander, who also serves as the division's fire support coordinator, with accurate federated intelligence. It is a limitation that creates mission risk.

Risk to Mission

The lack of intelligence personnel considerably decreases the DIVARTY commander's decision-making capability because of inadequate intelligence and analysis. Consequently, the commander must rely on the intelligence assessment by the division G-2. Typically, the intelligence products from G-2 are too strategic or broad in scope to provide effective support to the DIVARTY commander's decision-making process. With no personnel trained on intelligence systems maintenance, the DIVARTY S-2 must coordinate with the division G-2 to provide outside support. This creates a single point of failure for both DIVARTY and division. Additionally, there is only one IFS stack that exists within the DIVARTY, whereas a brigade combat team has three IFS stacks to mitigate the risk of relying on only one server.

When intelligence systems fail at division and DIVARTY, maintenance support is over-extended thus significantly eroding the ability to win the deep fight. As a direct consequence the commander will lack accurate and timely intelligence necessary for future combat operations. This was an issue the 1st Armored

common intelligence picture for the commander. As divisions become the new unit of action and adjust their training plan to incorporate rotations to combat training centers, it is necessary to have capable and enabled sections at echelon. To address this problem there are two possible solutions that can complement each other upon implementation.

Possible Remedies

The first possible remedy is to request a change to the MTOE in terms of equipment and personnel. A change to the DIVARTY MTOE allocating 35T support, specifically, personnel and additional IFS stacks to facilitate the necessary redundancy for mission accomplishment. The additional stacks also mitigate the risks associated with a single point of failure. The Army must adjust the MTOE to include an allocation of a minimum of two IFS Stacks and more preferably, three to DIVARTY. This is particularly pertinent as the DIVARTY transitions to reabsorbing the fires battalions from the BCTs according to the redesign plan of Army 2030 (United States Army/U.S. Army Training and Doctrine Command/U.S. Army Combined Arms Center). This would align with those allocated to a BCT. Further, the Army will need at least one 353T, one 35T30 and three 35T10s for a total of five 35T personnel assigned to DIVARTY to maintain the intelligence systems.

These allocations would enable the intelligence section to operate independently and serve as

a companion to division, rather than a combat minimizer. The DIVARTY S-2 would then be self-sustaining and not reliant on divisional support for intelligence architecture if the IFS stacks were in need of maintenance. As we advance to large-scale combat operations in our doctrinal development, transferring personnel from brigade combat teams and repositioning them within divisional elements is a possible strategy for identifying the personnel necessary for the implementation of this solution.

The second proposed remedy is similar to the first in that it requires a change to the MTOE, albeit only in terms of equipment. With the Department of Defense facing a recruiting shortage across the joint force, requesting additional personnel might be challenging. But if the DIVARTY was able to add an additional IFS stack and cross train the senior 35F on intelligence systems maintenance, then this intelligence deficiency exists no longer as a critical capability gap, but a combat multiplier. Cross-training the senior 35F or the Soldier with the most training on intelligence systems maintenance, allows the S-2 section to maintain its equipment without external support. Coordinating training with division's 353T and gaining administrative rights to maintain DIVARTY's intelligence equipment would enable DIVARTY to self-recover. This remedy increases the capability of the intelligence section to become self-sufficient. This ability for independent action is especially valuable when there are system disruptions or unanticipated frictions. The assignment of an additional IFS stack to DIVARTY allows for redundancy and mission continuity in the event of server failure. The intelligence section can continue to operate off the second IFS while the first server is under maintenance. This remedy is also highly feasible since it only requires additional equipment and no additional personnel. The cost and logistics associated with this solution is minimal, with time being the major factor. A training session coordinated with the division 353T can achieve this desired effect. This is a conversation between the 353T, DIVARTY S-2 and the division G-2 to obtain enough training on the system to remedy basic system issues and common intelligence system malfunctions such as the inability to pull data from higher or connect intel systems to the stack. Unless the 353T determines a specific course, the home station can remedy the issue with the major cost being time.

Summary and Discussion

Without a capable and robust intelligence section within DIVARTY, significant intelligence capability gaps exist, making the division vulnerable to enemy attack. Understanding this vulnerability is critical as Army doctrine emphasizes the division as the unit of action within large-scale combat operations. The Army must consider the proposed remedies for the improvement of the intelligence capabilities of DIVARTY.

With each possible remedy, the DIVARTY intelligence section becomes capable of sustaining itself and providing the commander with federated intelligence. It also allows the intelligence systems to operate independently, without the support of division's G-2. Subordinate and adjacent units to the division must be able to sustain themselves without the need for divisional support, especially DIVARTY. To prevail in the division's deep fight and shape operations for the maneuver elements, an intelligentization of DIVARTY is necessary to increase the lethality of the Army's divisions. By providing multiple IFS stacks, 35T personnel positioned within the DIVARTY and cross training the senior 35F or the Soldier most capable on intelligence systems maintenance and integration, DIVARTY can provide a robust response to our nation's enemies.

CPT Raymond Ferris is currently a student at the Military Intelligence Captains Career Course (MICCC). Among his previous assignments, he served as the assistant S-2 for the 1st Armored Division, Division Artillery, and as an executive officer for Bravo Company, 532nd Military Intelligence Battalion, 501st Military Intelligence Brigade.

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Control vs Coordination:

An Argument for the Disaggregation of Graphic Control Measures and Inclusion of the Battlefield Coordination Line into U.S. Army Doctrine.

By MAJ Donald S. Frazier, 1AD

“The staff has been planning for months. Phase lines and Graphic Control Measures (GCMs) are meticulously developed and synchronized across all maps and common operating pictures (COPs). The forward boundaries, intel-handover line and the limit of the Airspace Control Sub-Sector (ACSS) are integrated perfectly. G2 has spent countless hours refining a detailed enemy assessment and assigning triggers to shift battlefield framework. Branch plans and targeting objectives have been approved for the next 96 hours. The stage is set. In four hours, the Corps will cross the line of departure.”

Fast Forward 18 hours.

“The enemy action is dramatically different from the assessment. There is minimal resistance. The commander directs a shift in battlefield framework to enable the Corps to exploit opportunities and seize the initiative. G2 begins coordination to shift the intelligence handover line (IHL), air planners revise the unit airspace plan (UAP) and G3 disseminates refined framework across the command posts and subordinate unit headquarters.”

“G2 reports it takes four hours to transition the IHL. The air cell updates that emergency airspace changes require six hours. Current operations assesses it will take one hour to push common graphics.”

“The Corps stalls, the initiative is lost.”

This vignette is no fairy-tale, it is an unfortunate trend and by-product of aggregating graphic control measures with fire support and airspace coordination measures onto common phase lines. In the interest of simplicity, the commander forfeited the necessary flexibility to seize opportunities and retain decisive advantage.

Imagine instead; the commander attempts to

exploit an opportunity. He or she immediately directs a boundary change. Common graphics are distributed within the hour, enabling parallel planning at the lowest level. The IHL is separate from the division forward boundary (DFB) and coordination no longer disrupts the boundary shift. The air cell has an approved airspace plan beyond the DFB, but short of the fire support coordination line (FSCL) facilitating the immediate shift of framework. The Corps maintains tempo and wins the day.

As the Army modernizes doctrine for Multi-Domain Operations (MDO) in support of Large-Scale Combat Operations (LSCO), we must establish a dynamic process to adjust framework and reduce the coordination requirements for the ground force commander. The Army needs to review and more clearly define GCMs and appropriately consider the deliberate employment of fire support coordination measures (FSCMs) and Airspace Coordinating Measures (ACMs).

Boundaries are “lines that delineate surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas.”¹ There are three principal types of boundaries as defined in FM 1-02.1 “Operational Terms:” Forward, Rear and Lateral.² Boundaries are surface focused and

1 FM 1-02.1 “OPERATIONAL TERMS.” MARCH 2021 pg. 1-11.

2 Forward Boundaries are designated to divide responsibilities between an echelon and its next higher headquarters. Rear Boundaries, likewise, define the rearward limit of a unit's area, and define the start of the next echelon's support area. Lateral Boundaries extend from a unit's rear boundary to its forward boundary, and are often used to delineate battlespace between adjacent units.

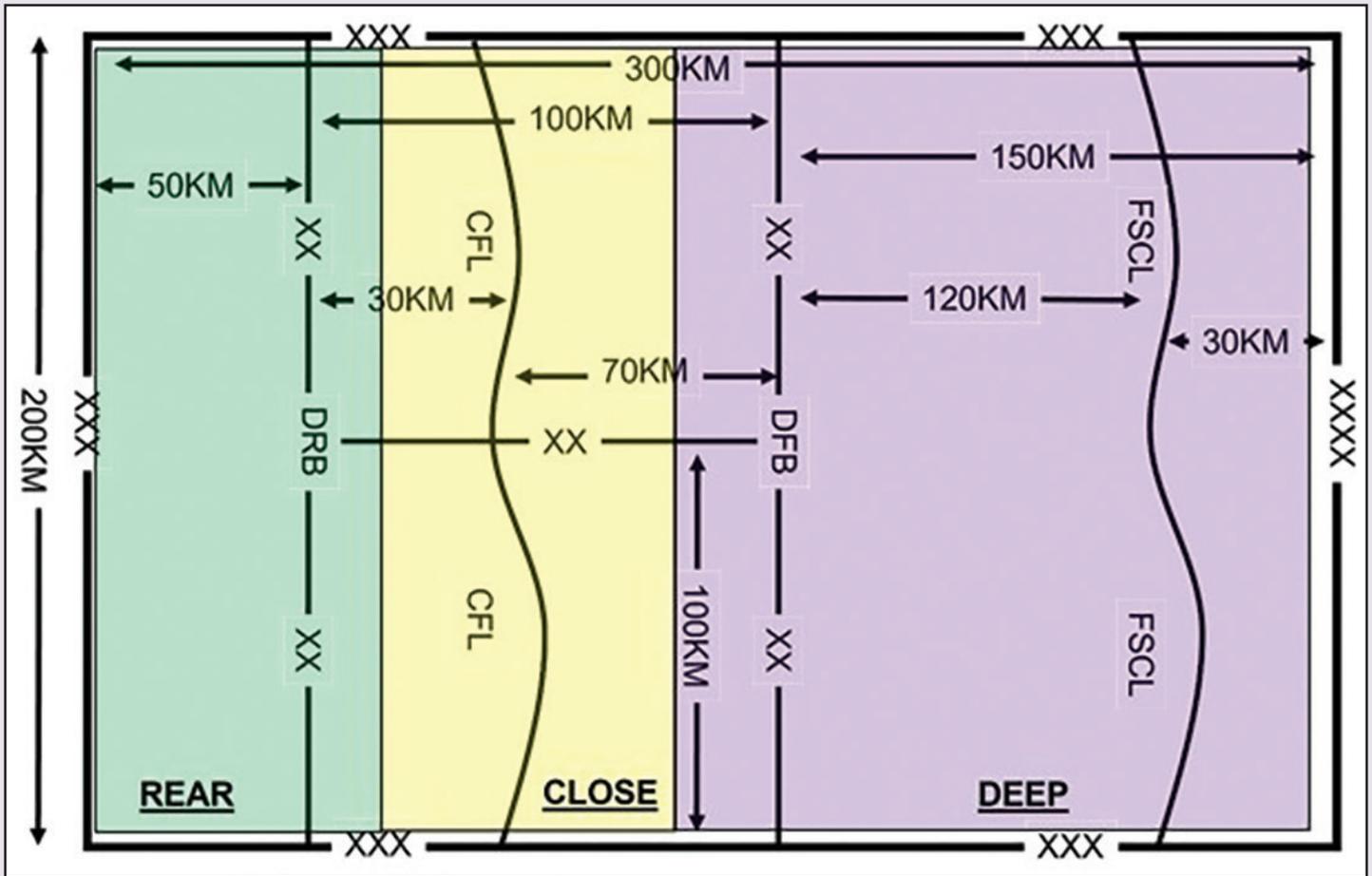


Figure 1: Simple Battlefield Framework

outline the Area of Operation (AO) in depth and breadth, but do not frame the AO in all three dimensions.

FSCMs help establish deep and close. The coordinated fire line (CFL) enables permissive fires in the division deep area. The FSCL delineates coordination requirements for the joint attack of surface targets³

ACMs facilitate the efficient use of airspace and provide safeguards for friendly forces.⁴ The coordination level is the “procedural method to separate fixed-wing and rotary-wing aircraft.”⁵ The coordinating altitude (CA) “separates users and is the transition altitude between different airspace control elements.”⁶

Boundaries delineate the surface area of the AO. The CFL delineates the deep and close fight. The airspace plan is an agreement between the ground force commander and the airspace control authority to establish a coordinating altitude, below which the ground commander exercises airspace control. The FSCL is established by the land component or joint force commander and is the forward edge of coordination authority for the establishing headquarters.⁷

Commanders must have total ownership of their AO; employ boundaries to deconflict ground forces and leverage fire support coordination measures and the airspace plan to enable the seamless integration of fires and maneuver and create opportunities to mass kinetic and non-

3 P 3-09 “Joint Fire Support.” APRIL 2019

4 *Id.*

5 JP 3-09 “Joint Fire Support.” APRIL 2019 Pg. A-15

6 JP 3-52 “Joint Airspace Control.” NOVEMBER 2014 Pg. C-6

7 For purposes of brevity, this paper excludes commentary on the Intel Handover Line (IHL), Engineer Work Line (EWL) and other combined arms graphic control measures which are required to appropriately frame the AO.

kinetic joint effects. The Battlefield Coordination Line (BCL), a Marine Corps FSCM⁸ is recognized in joint doctrine and is the ideal solution to enable Army units to disaggregate FSCMs and ACMs from GCMs.

Tactical Command and Control (TAC C2) platforms are airspace control elements employed by the air component commander to control air operations.⁹ TAC C2 is available in airborne platforms and ground-based platforms.¹⁰ Air Support Operations Centers (an airspace control element) are co-located with division joint air-ground integration centers (JAGICs) and communicate regularly with TAC C2 to clear airspace in the division and Corps deep. TAC C2 bridges the gap between the “demonstrated limit of a division’s ability to control airspace” and the FSCL.

The JAGIC is trained to positively and procedurally control joint fires and airspace users from a division’s rear boundary to the FSCL.¹¹ However, “[JAGICs] must demonstrate they can control [airspace] and have established procedures that satisfy theater airspace control plan (ACP) requirements.¹² The Air Support Operations Center (ASOC), co-located with division, can control airspace from the rear boundary to the FSCL unless the size of the AO is too great for the division to demonstrate the ability to control all of the airspace within it.

Tactical Corps headquarters identify the forward edge of division battlespace with the DFB. This is the limit of a division’s authority to affect the battlespace without coordination with HHQ. This should not be the limit of a division’s airspace control responsibilities.

The DFB, a graphic control measure, must not align with the forward limit of a division’s airspace control sector, because the Corps commander should not be required to coordinate with the air component to adjust boundaries within his or her

AO. When the ASOC at division cannot control airspace to the FSCL, TAC C2 may be required to control airspace between the division limit of airspace control and the FSCL. It takes hours to coordinate with to adjust airspace control even if the plan is preconstructed. The Corps should plan to create the largest feasible division airspace control sector to maximize the Corps reach and minimize coordination requirements to facilitate the responsive integration of fires. Army and Air Force doctrine lacks the coordination measures to articulate an intermediate coordination line between the division forward boundary (controlled by Corps) and the FSCL (controlled by the CFLCC or JFC.)

The BCL is the FSCM that the Marine Corps employs to address this challenge. The BCL: “facilitates the expeditious attack of surface targets of opportunity between the BCL and the FSCL.”¹³ The BCL solves an Army and Air Force problem by providing a linear FSCM between the CFL and the FSCL and enables Corps commanders to disaggregate the DFB from the forward limit of a division’s airspace control sector. Ground commander can still strike targets beyond the BCL and short of the FSCL and the air component’s airspace control responsibility is reduced to that airspace the Corps cannot control.

Division airspace control sectors do not imply that the division is the only entity that employs effects within the sector. The ASOC in the division AO controls all aircraft below the CA within the control sector. The Corps coordinates all fires through airspace control sectors, whether that is an air component platform or an ASOC co-located with the subordinate Division headquarters. There should be a clear distinction between the directed limit of division effects; the DFB and the limit of airspace control delegated to the Division airspace control sector. Corps commanders achieve maximum flexibility by employing all airspace controllers in their AO to the limit of their capabilities.

8 JP 3-09. “Joint Fire Support.” APRIL 2019

9 ATP 3-52.4 / MCRP 3-20F / NTTP 6.02.9 / AFTTP 3-2.8 “ACC Multiservice Tactics, Techniques, and Procedures for Air Control Communication.” SEPTEMBER 2021.

10 *Ib.* *Id.*

11 ATP 3-91.1 / AFTTP 3-2.86 “The Joint Air Ground Integration Center.” APRIL 2019.

12 ATP 391.1 / AFTTP 3-2.86 “The Joint Air Ground Integration Center.” APRIL 2019. Pg. v.

13 JP 3-09 “Joint Fire Support.” APRIL 2019. Pg. A-3.

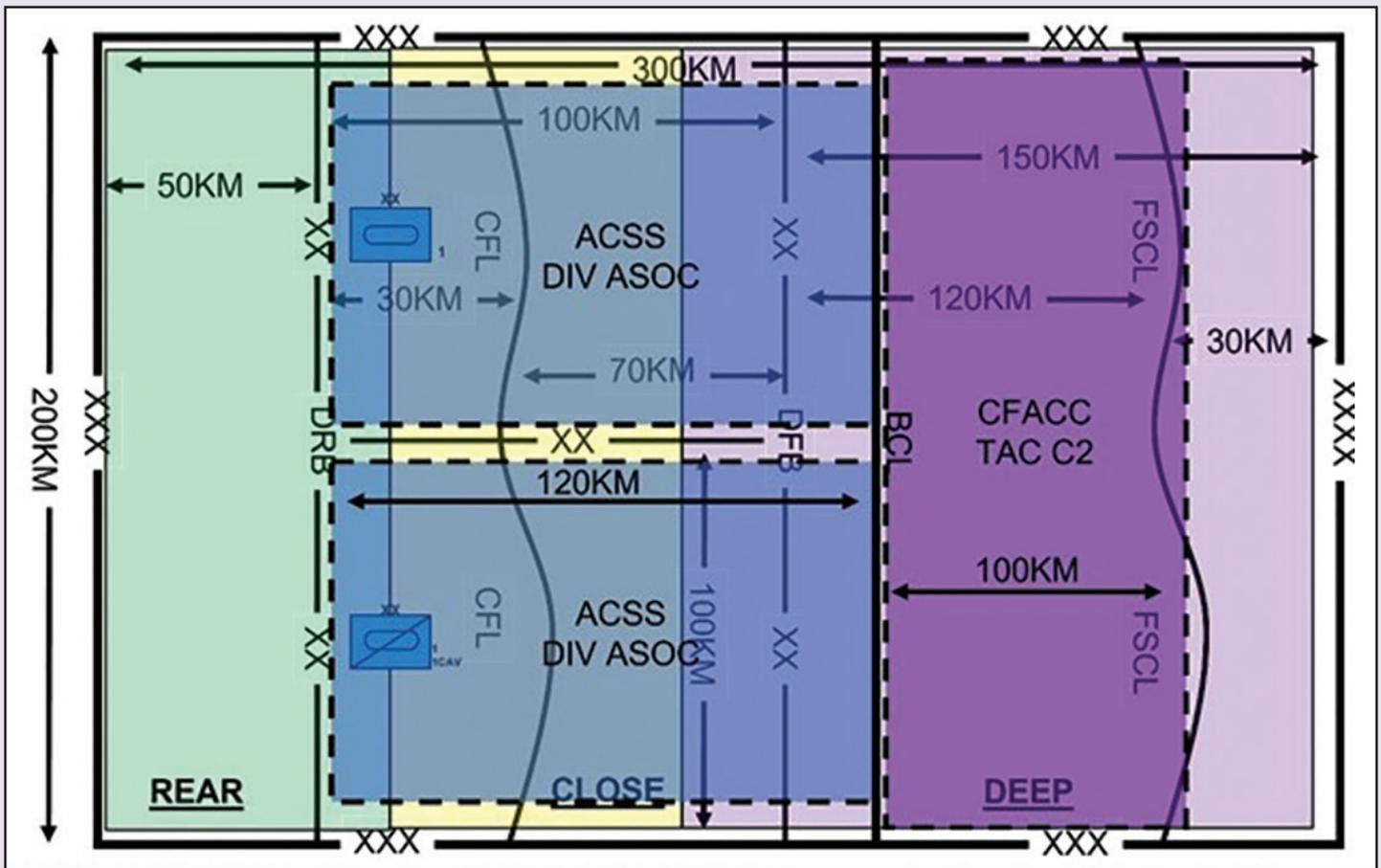


Figure 2: DIV ACSS (BLUE) and the CFACC TAC C2 (PURPLE) disaggregated from the DFB using the BCL.

The Corps AO must remain dynamic, flexible and three-dimensional. Boundaries establish ground control clearly articulate battlespace owners and afford divisions sufficient battlespace to transition targets from the Corps and shape conditions for brigade combat teams (BCTs) in the close fight. TAC C2 short of the FSCL comes at a cost to the air component. Air planners must create the most flexible airspace plans possible to maximize the effectiveness of joint assets. Limiting a division's airspace control sector its forward boundary places undue strain on the air component by generating a need for redundant airspace control. When the Corps, through division assigned airspace, cannot employ the means to control the airspace from division rear boundary to FSCL, it should make every attempt to provide as much airspace coverage as possible.

Corps headquarters maintain authority over the battlespace between the division forward boundary and the Corps forward boundary. The airspace control sector does not underscore the

division commander's authority to operate or effect beyond the forward boundary without coordination. The BCL is the tool Corps and the airspace control authority could use to produce a dynamic, integrated airspace plan that integrates the Army aligned resources with dedicated air component platforms, from the rear boundary to the FSCL.¹⁴

Permissive and flexible battlespace enables commanders to exploit opportunities and secure asymmetric advantage. The only way to achieve this is to deliberately disaggregate coordination measures from boundaries and to incorporate all elements of joint doctrine, specifically the BCL into Army and Air Force doctrine to preserve options and create decision space for commanders.

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14 JP 3-09 "Joint Fire Support." APRIL 2019. Pg. A-3.

Consolidation For Success:

A LSCO Driven Electronic Warfare and Air and Missile Defense Concept

By COL Thomas Goettke, MAJ David Endter & CPT Frank E. Ruscito

BACKGROUND

Gunnery is not a foreign concept to Fires professionals; manuals and publications govern almost every aspect of training and certification for Field Artillery and Air Defense Artillery operations. They lay out a step-by-step process to verify that Fires Soldiers are trained and ready to deploy to win in large-scale combat operations. Gunnery conceptually aligns with the “Crawl, Walk, Run” model that sets requirements for classroom instruction, individual and crew certification, then platoon and beyond collective training progressing to dry and live fire exercises at echelon. After organic units train and certify individual and team skills, trained forces must integrate into their supported unit’s collective training path. Organic Field Artillery units frequently execute this methodology with 13F training, completing certification prior to a supported battalion’s platoon live fire training. A cadre of Master Gunners and experts in various specialties execute this methodology under the guidance of evaluation criteria defined by the division or a brigade fire support coordinator (FSCOORD). Given the growing complexity of the contemporary battlefield and increased premium on technical training, the 13F training methodology can be a template for other military occupational specialties – specifically for the 14-series when serving in an infantry division. Owing to frequent United States Central Command (CENTCOM) rotations, 10th Mountain Division reorganized to specifically train for the Counter-Unmanned Aerial System threat (C-UAS) threat our units would encounter in theater. Using the 13F model, 10th Mountain Division experimented with an Air and Missile Defense and Electronic Warfare (AMDEW) Company to effectively train for C-UAS and Small Unmanned Aerial System (sUAS) threats and prepare for a pending deployment.

Over several years, the 10th Mountain Division and its subordinate brigades gained valuable first-

hand experience during their mission in CENTCOM supporting Operation Inherent Resolve (OIR). The threat of sUAS increased in volume and complexity for years, culminating in the widespread use by the Islamic State and other militant groups. Initially, enemy systems were commercial drones like the DJI Phantom Quadcopter equipped with explosives. The threat evolved to become the same systems used to observe and disrupt friendly targets in swarms. Over time, drones built deliberately for one-way attacks proliferated and became the main threat in both CENTCOM and in the Russian invasion of Ukraine with few effective countermeasures. In addition, disruption of the electromagnetic spectrum and cyber exploitation offered threats that required a parallel training path to address. In 2021, 1st Brigade, 10th Mountain Division developed a way to train for base defense operations throughout CENTCOM as part of their upcoming mission. They integrated teams of Cyber-Electromagnetic Activities (CEMA), air defenders and supporting personnel to man functional base defense operations cells (BDOC) in a theater capable of responding to the C-UAS and electronic attack threats. The concept required a revision of how the personnel would train, which included mission-specific tasks and courseware, as well as collective training and live fire exercises in C-UAS-specific operations.

The deployment was successful with the developed Air Missile Defense/Electronic Warfare (AMDEW) Cells performing beyond their initial expectations. The experiences of the cells collected into the AMDEW Mission Readiness Glidepath remain the standard for BDOC training for 10th Mountain Division units that prepare to deploy to CENTCOM. Then commander of 1st Brigade, COL Brian Ducote, reviewed the lessons and convened an AMDEW Symposium following the unit’s redeployment in 2023 to maximize the exposure of the concept of AMDEW teaming. The 10th Mountain Division implemented a series of actions to better train the 14- and 17-series

Soldiers for their tailored mission, laying the groundwork for what would become the AMDEW Company.

In May 2023, the AMDEW Company consolidated 14- and 17-series from across the division into a formation under division artillery (DIVARTY) to maximize lessons learned and disseminate recent downrange experience from seasoned NCOs and Warrant Officers. In May 2023, all 14-, 15-, 17- and limited numbers of 25-series personnel from 10th Mountain's 1st BCT, 2nd BCT, DIVARTY and 10th Combat Aviation Brigade (CAB) consolidated with their equipment and set on a training glide path targeted at creating Soldiers fully trained and certified in their respective function, with an end state to reintegrate with their parent unit upon the conclusion of individual and small unit proficiency training. What followed through the latter half of 2023 was an ambitious project of training management that captured the benefits and risks associated with consolidation. The result of the consolidation was overwhelmingly positive for both Soldier competency and unit training within 10th Mountain. Continued success is reliant upon the analysis and after-action review to effectively apply the lessons learned from the AMDEW to further refine the concept.

CONCEPT

AMDEW Company personnel are organized for combat, aligning a squad with each BDOC at echelon, to start the team building ladder. At the AMDEW team level, a squad is comprised of an Air Defense and Airspace Management (ADAM) Cell, battalion level electronic warfare (EW) CEMA teams and the brigade CEMA team. Leadership is organically assigned among the teams with a branch immaterial senior NCO assuming command and control of the squad. Sub-hand receipt holders consolidated their equipment aligned with their respective squads. For any equipment shortages within the team, the ability to cross-load can occur to provide maximum support for assigned missions. The AMDEW Company intends to function as an independent company, administered under 10th Mountain Division DIVARTY HHB until a company-level UIC can be established.

The two populations of AMD and CEMA personnel have separate training glide paths with unified requirements issued by their parent

units, namely a timeline to meet an expected training threshold. To develop the company training plan, AMDEW modeled its development from the DIVARTY model for fire support team certification. The AMDEW would have governing authority of training and certification for AMD and CEMA tasks by their relevant publications in the same manner DIVARTY conducts fire support certification per their annual Red Book under the supervision of Master Gunners and the fire support coordinator (FSCOORD). The ADAM Cells benefitted from TC 3-01.50 as the official doctrine for the ADAM Cell Gunnery Program which defines Tables I through VI starting with individual level operator certification to brigade level integration. CEMA was a more difficult domain to certify, as no documents above the division level exist to govern collective CEMA training requirements. To resolve this, a consortium of CEMA professionals from across the division created the Tier Training Model inspired by the intelligence community's Military Intelligence Training Strategy (MITS) Tier model. This system managed training at the unit support level with Tier IV signifying trained personnel as individuals and Tier I trained as fully manned platoons directly engaging with the brigade.

With personnel and equipment in place and training models set, AMDEW identified several

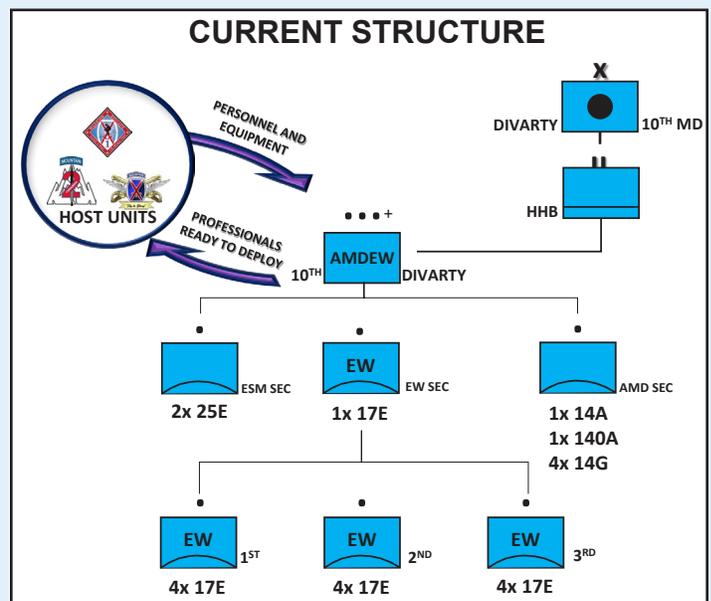


Figure 1: AMDEW Line Wire Diagram. Illustrates the task organization of the AMDEW. It is a Platoon plus element that falls directly under 10th Mountain Division HHB/DIVARTY. AMDEW is then broken into three sections; two that affiliate with CEMA and the remaining for the air missile defense to conduct MOS specific training.

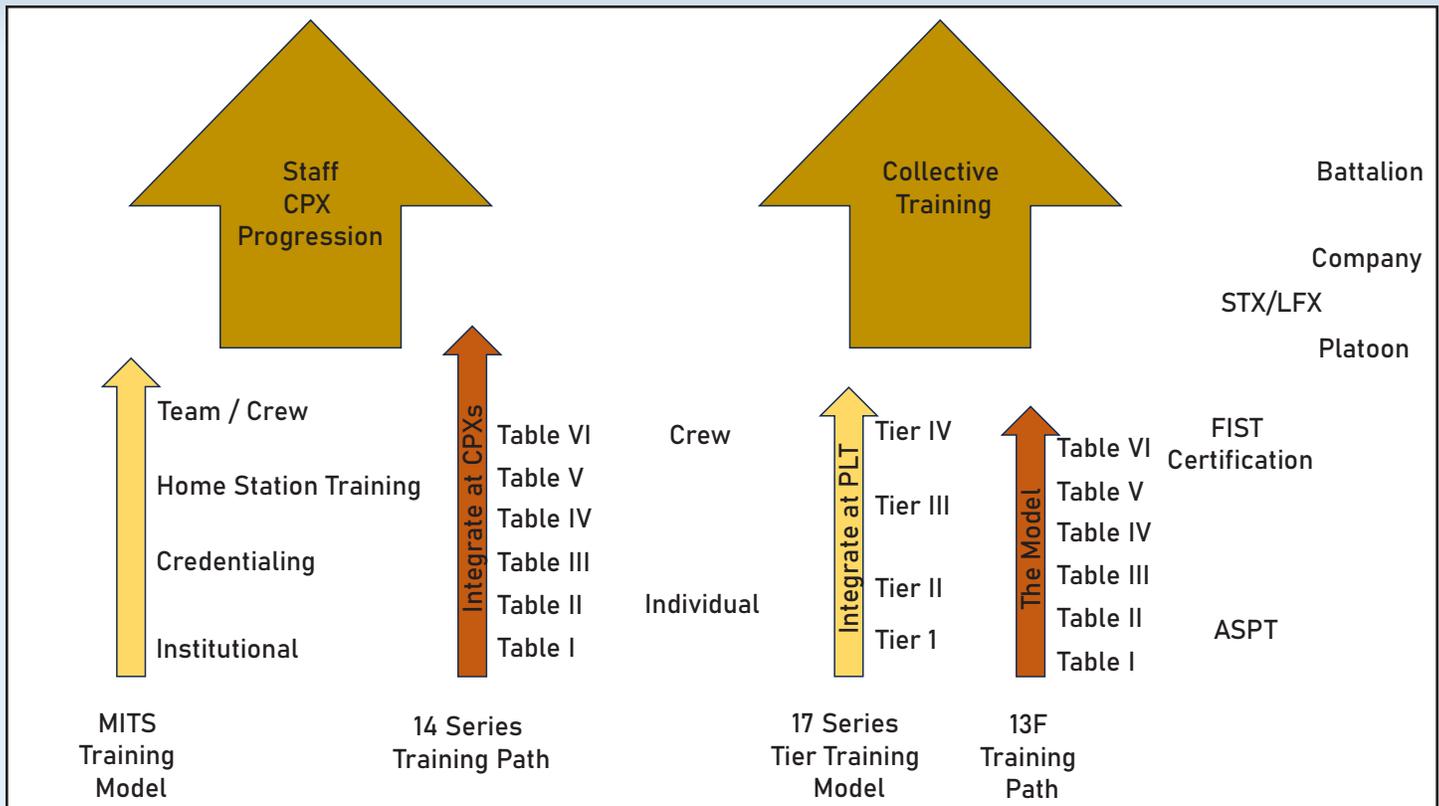


Figure 2: 14-series patterned after 13F while 17-series patterned after MITS. However, the supported unit's collective CPX progression drove 14-series reintegration while the 17-series had to be ready by platoon STX/LFX training.

objectives for its first year. They included:

- Ensure fully trained personnel for reintegration with 1st BCT no later than 30 January 2024. This included ADAM personnel certified to Table VI and CEMA personnel certified to Tier IV.
- Conduct Annual Sentinel qualification.
- Support all Hunter-Electromagnetic Spectrum (Hunter EMS) events conducted for the remainder of the 2023 calendar year. Hunter EMS is a 10th Mountain Division organic event consolidating 13-, 14-, 17- and 25-series to train together with the integration of emerging technology from industry partners.
- Initial training calendars published in June 2023 and AMDEW ready to conduct training and certification of the 14-, 17- and 25-series personnel within 10th Mountain Division.
- Conduct an after-action review (AAR) in December 2023 after the conclusion of

ADAM Table VI certification. Certification oversight and authority resides with 10th Mountain DIVARTY Commander. Focus of the AAR identified successes and shortfalls of the initial AMDEW certification process.

OUTCOMES

The AMDEW training calendar aligned with brigade level training events, such as command post exercises (CPXs), Hunter EMS and C-UAS training. The AMDEW Company achieved all the assigned objectives in 2023 while ensuring adjacent units and the division received adequate support. Collective training events consisted of Hunter EMS V, VI and VII and 1st BCT's monthly CPX window. Units contacted DIVARTY S3 for requests for support. Despite reorganizing for combat, legacy relationships from the supported brigade introduced the most friction as both AMDEW and the supported brigade fully leveraged senior NCO leadership. Despite this personnel friction, the system allowed AMDEW to adapt available personnel and equipment to continue to train while supporting operations.

The 14-series population began their certification process with a week of classroom training focused on the operator level and retraining on air defense and airspace fundamentals. Table 0 aligned as a quarterly event for all 14-series personnel at the Townsend Mission Training Complex (MTC) at Fort Drum. Following the operator reset of the initial training horizon of Table IV, a Sentinel qualification in September 2023 moved to crew-level training and emplacement of ADAM Cell equipment. By the end of September, all 14-series personnel in the 10th Mountain Division completed appropriate testing for Sentinel certification and evaluated for Table IV certification. Fort Drum's air defense personnel consistently achieved radar emplacement in 22 minutes; eight minutes faster than the 30-minute standard. Training continued with a second quarterly Table 0 and ended in December 2023 with two Table VI events for 1st BCT and 10th CAB. 10th CAB did not participate in consolidation due to the mission-essential nature of the CAB ADAM Cell. However, they trained with the AMDEW on several occasions and provided equipment and personnel for operations as available. With the completion of Table VI, AMD personnel returned to 1st BCT to prepare for an exercise at the Joint Readiness Training Center (JRTC) and set conditions for a follow-on deployment.

CEMA training accelerated rapidly but followed a similar timeline to the air defense side. Soldiers achieved Tier IV by September 2023, which consisted of individual Soldier tasks and EW operations for staff and field operations. The training was an effective combination of how individual tasks supported the CEMA operators' ability to navigate, direction find and support maneuver forces. With the completion of Tier IV, leadership decided that before reintegration back to the organic unit, the AMDEW would train and certify EW operators to achieve Tier III to support 1st BCT more effectively at the squad and team level. Balancing this effort with existing obligations to Hunter EMS VII and a CPX initially proved difficult. However, operators achieved Tier III certification in December 2023. Based on the results, consolidation and alignment with a coherent training glidepath allowed AMDEW to achieve its training objectives rapidly, allowing Soldiers the opportunity for additional training to enhance skills outside of normal certification tasks.

Overall, Soldiers within the AMDEW overwhelmingly support the consolidation. Junior enlisted Soldiers expressed greater job satisfaction and a sense of purpose. NCOs relished the opportunity to serve as squad leaders and develop junior personnel. Moving personnel from their assigned unit allowed them to focus full-time on their role as air defense and CEMA professionals and bring their desired capability and expertise back to the unit for collective training. Division leaders praised the efforts of the AMDEW and its success in training as personnel prepare for deployment to the Joint Readiness Training Center (JRTC). Upcoming culminating exercises and an eventual deployment will be the Soldiers' true test as they fully reintegrate back to brigade staff operations and able to display their skills as experts in their fields.

RECOMMENDATIONS

The AMDEW model achieved its stated goals, but not without ample friction during implementation. If a unit were to attempt a similar model to consolidate and train 13-, 14-, 15- and 17-series personnel throughout a division, the 10th Mountain Division AMDEW recommends the following amendments or adjustments to your unit's equivalent echelon.

- Consolidate EW and air defense personnel separately. Mission sets for EW personnel do cross over with ADAM Cells, but not enough to train concurrently. ADAM Cells benefitted greatly from training, however the ADAM Cell is a component of the S3 and provides critical functionality to adjacent cells, such as fire support, counterfire and protection. Task organization of the AMDEW Company should reflect an AMD platoon and an EW platoon. Oversight will be with the AMDEW leadership, but each platoon will have different training glide paths. Furthermore, the timelines for when EW and ADAM cells return to the BCTs will differ.
- Conduct a thorough review of published doctrine dictating certification requirements for ADAM and CEMA to omit redundant tasks, or tasks that must be executed at the BCT level. An example is ADAM Gunnery tasks to control airspace despite ADAM Cells

not having the requisite level of control. While simulation can mimic BCT BDOC operations, later tables in ADAM Gunnery require to execute during a CPX. Emphasis on quality training to achieve and assess gunnery standards should occur during execution of exercises, especially if in preparation for a deployment.

- Establish administrative requirements before consolidation. Assign a commander and platoon leaders for each platoon.
- AMDEW Soldiers should be attached to DIVARTY to avoid disruption in BCT reporting.

- Standardize testing products and seek division oversight of training materials and certification criteria. This includes providing dedicated qualified standardization evaluators for both ADAM and CEMA, who are not organic to the host units to provide the more accurate and unbiased assessments of training and certification. Consolidate these standards in an SOP for continued refinement and future use.
- Facilitate external support for training and certification. This specifically includes the brigade aviation elements (BAE) at the BCT levels. While the 15-series are

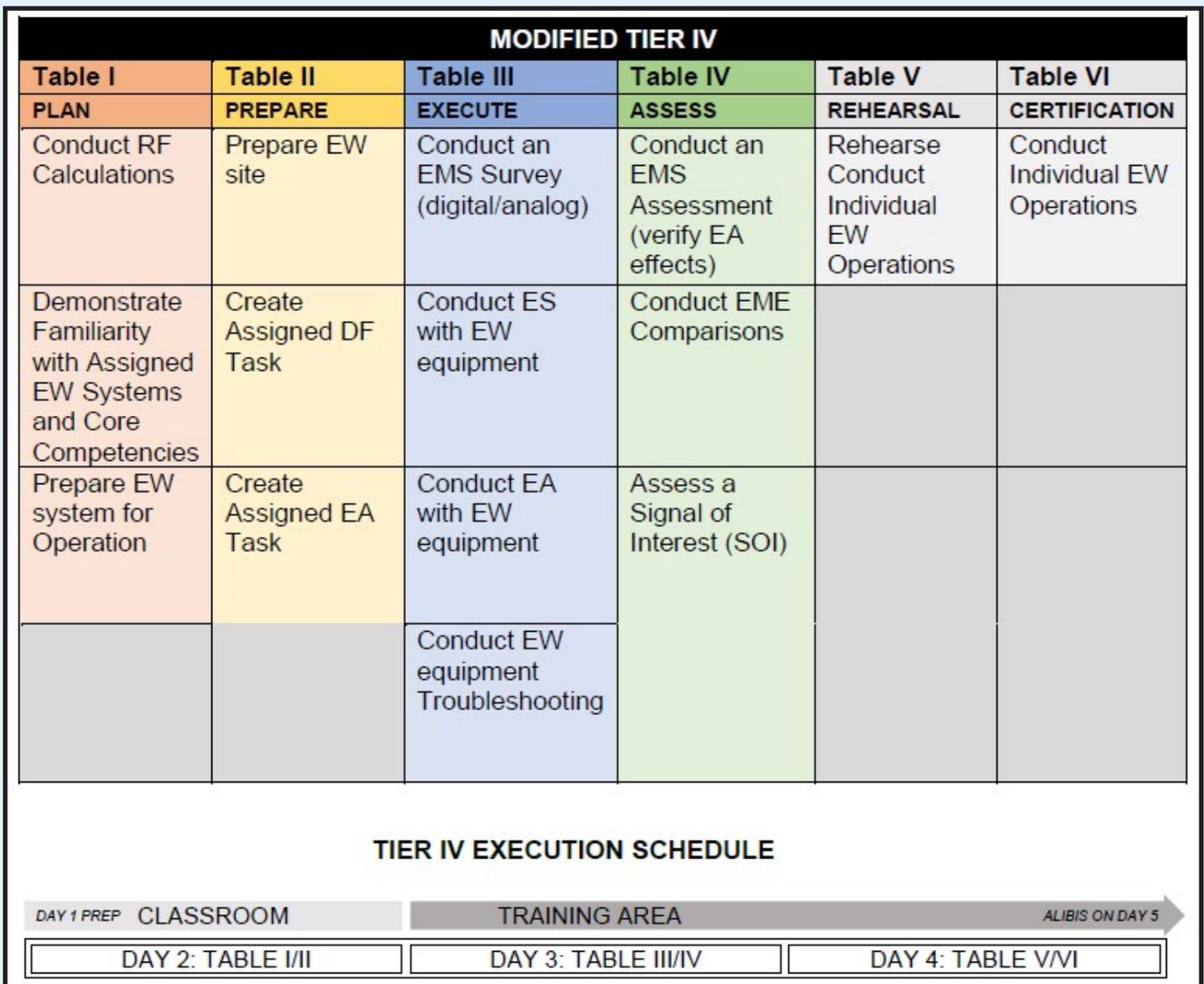


Figure 3: Modified Tier IV training for the AMDEW 17-series. Training takes place over one week. Day 1 is preparation and in-brief. Table I and II are conducted in a classroom environment on Day 2 and Tables III/IV conduct in a field environment on Day 3. Day 4 begins with evaluation in the field and culminates in a written test in a classroom environment.

MODIFIED TIER III					
Table I	Table II	Table III	Table IV	Table V	Table VI
PLAN	PREPARE	EXECUTE	ASSESS	REHEARSAL	CERTIFICATION
Plan EW Site Development	Prepare EW Team and Equipment	Establish EW Team site(s)	Conduct EME comparison		
Plan ES Task		Conduct EA as a Team			
Plan EA Task		Conduct ES as a Team			

Figure 4: Modified Tier III training for the AMDEW 17-series. Training expands to crew level certification and encompasses site development, preparation of equipment, establishment of EW sites and conducting electromagnetic environment (EME) comparison.

currently not part of AMDEW, they provide an integral role in training, certification and execution of the mission sets for ADAM. For the 10th Mountain Division, the responsibility for coordination across formations resided with the DIVARTY S3.

- Write the entire AMDEW training schedule up front. A published training schedule acts as an agreement among all stakeholders on expectations and timelines for collective training support.
- 17-series trained IAW the tier evaluations illustrated in Figures 3 and 4. Within each tier are the associated table benchmarks to advance to the next level of training. Each table consists of a specific task with a go/no go criteria to achieve the desired proficiency of training, similar to Training and Evaluation Outline (T&EO) criteria when utilizing Mission Essential Tasks (MET).

CONCLUSION

Soldiers want to do their jobs. They inherently want to be the best at what they do and be the subject matter experts in their respective fields.

Organizing for combat with the expressed purpose to focus on their specialties raises morale, gives Soldiers a clear task and purpose, creates networks that transcend across brigade level echelons and enhances their areas of expertise. It enables Soldiers to become force multipliers to their organic units.

Large-Scale Combat Operations necessitates a high degree of training from AMD and cyber professionals. The AMDEW Company is a way to ensure there is a concentrated effort to train our Soldiers and provides accountability measures for our critical enablers. Leaders owe quality training to our Soldiers so they can address the ever-evolving threats encountered downrange. The AMDEW concept is not perfect but organizes a critical path to provide Brigade Combat Teams with trained personnel for their collective training events.

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Transforming Tactical Targeting: Unleashing the Power of AI, ML and RPA through Project TITAN

By CW2 Jordin Katzenberger

The Army of 2030 and beyond will face significant challenges during Large-Scale Combat Operations (LSCO) as technology advances to new heights and continues to empower adversaries to strengthen system capabilities and increase operational reach (GAO, 2019). These challenges drive changes in tactical-level targeting to enable a more efficient and accurate means to acquire and engage targets. This dynamic and constantly changing technological environment has created opportunities to improve tactical targeting procedures by utilizing artificial intelligence (AI), machine learning (ML) and robotics process automation (RPA). The utilization of sophisticated technology can significantly transform the process of target acquisition and engagement, enhancing the operational capabilities of military units in terms of timeliness, precision, productivity and overall performance. Utilizing AI, ML and RPA through Project TITAN (Tactical Intelligence Target Access Node) in the tactical-level targeting process will improve the accuracy, efficiency and effectiveness of target acquisition and engagement, ultimately empowering military units to achieve mission objectives with greater precision and reduced collateral damage.

According to Svetlana Sicular, “As AI technology evolves, the combined human and AI capabilities that augmented intelligence allows will deliver the greatest benefits to enterprises” (Bhakuni, 2023). AI has the potential to substantially impact the Army targeting process through its ability to augment data analysis and provide suggestions at a faster pace, with more capacity than a human analyst (Bhakuni, 2023). Utilizing predefined input criteria from a human source, AI can evaluate hundreds of rows of data in seconds or minutes to enable decision making. The ability to handle and evaluate large amounts of information and tactical data quickly and efficiently makes it easier to find and evaluate possible targets. Through the utilization of ML methodologies, AI can discern patterns and establish connections within past data to generate more precise forecasts and informed targeting strategies. Furthermore, recommendation systems driven by AI can aid in the target selection process by offering valuable insights and ideas derived from the study of pertinent data sources. Using AI systems can significantly improve the speed and scalability of targeting processes to enhance overall efficiency and effectiveness. This improvement enables commanders to make well-informed decisions within a reasonable timeframe.

In conjunction with AI, ML will be essential in the Army targeting process, as it enables the study of patterns using historical data, the creation of target

templates and the allocation of resources. Like AI, ML algorithms can examine extensive volumes of historical data, including intelligence reports, sensor data and operational records. This analytical process aims to detect patterns and trends that might potentially signify targets or threats (Bhakuni, 2023). Through the recognition of these patterns, ML assists in the identification of high-value targets and evaluates the level of their relevance to determine high-payoff targets based on inputs from the targeting officer. To reduce risk, considerations will have to be taken to develop unbiased criteria for the AI solution to evaluate against. Additionally, a final review of outputs to validate the provided high-payoff target (HPT) in order to avoid any negative ethical and legal considerations prior to engagement. ML approaches may also be employed to generate target templates that effectively encapsulate the distinctive attributes and behaviors of specific targets to facilitate their recognition and monitoring. Moreover, ML algorithms enhance resource allocation through the examination of past data pertaining to the accessibility and efficacy of military assets. This empowers commanders to distribute resources in a manner that is both efficient and effective throughout the targeting process.

Utilizing RPA in the Army targeting process can automate repetitive operations and facilitate efficient information exchange across various systems and stakeholders. RPA software robots automate labor-intensive and manual activities associated with data collecting, data input and report preparation. This automation enables humans to allocate time and efforts to more crucial elements of targeting. Through the automation of these operations, RPA can improve the efficiency and precision of information processing, facilitating expedited decision-making processes. RPA can enhance the efficiency of information flow via the integrating systems and automating data exchange processes. This practice enables the effective dissemination of pertinent intelligence and operational information among all stakeholders engaged in the targeting process promoting collaboration and increasing overall situational awareness.

The main goal of the TITAN program is to improve situational awareness and the distribution of intelligence at the tactical level (PEO IEW&S, 2022). TITAN aspires to enhance the collection, processing and dissemination of vital intelligence information through the utilization of cutting-edge technology. This strategic approach strives to expedite and optimize the data flow, equipping commanders and troops with the requisite knowledge to efficiently accomplish

mission objectives. TITAN enhances commanders' comprehension of the operational environment in real time, enabling them to make decisions based on current intelligence. A significant advantage of TITAN is the ability to collect, analyze and share intelligence data across various echelons simultaneously using satellites, radars, unmanned aerial vehicles (UAVs), human and other sensor platforms. By expediting the acquisition, processing and dissemination of intelligence, TITAN facilitates quicker decision-making cycles and enables commanders to adapt to a rapidly evolving operational environment. The ability to perform deep sensing has been identified as one of the most significant gaps the Army must address as operations transition to LSCO (NAIIO, 2022). TITAN's ability to synchronize assets across multiple domains will improve the ability to conduct deep sensing and enable a more accurate selection and prioritization process of targets within the area of operations.

The integration of cutting-edge technologies, including AI, ML and advanced sensor platforms, into the Army's targeting process is anticipated to yield a substantial technical edge in overcoming future adversaries. These capabilities provide a complete and up-to-date representation of the operational environment, enabling the identification and surveillance of possible targets over large geographical regions. ML algorithms examine extensive quantities of data to identify patterns and recommend target prioritization. As a result, these algorithms contribute to improving target selection and engagement. The efficient examination of data using AI and ML accelerates the targeting process in dynamic operational environments.

In addition, utilizing AI and ML technology enables the implementation of adaptive targeting methods. These strategies are characterized by the ability to continually acquire knowledge from newly available data for commanders to adjust tactics in response to changing conditions. This practice guarantees the attainment of efficient responses to newly arising threats and empowers the military to maintain a strategic advantage over enemies (Peachey, 2020). Moreover, the utilization of RPA assumes a pivotal function in enhancing cooperation through automating data interchange and alleviating the cognitive burden on analysts. This enables individuals to concentrate on crucial duties while guaranteeing the distribution of operational information, fostering situational awareness and collaboration among those involved in the targeting process.

The minimization of collateral damage is significantly influenced by the precision and accuracy offered by AI and ML techniques housed within TITAN. By examining trends, historical data and contextual information, these technologies provide the capability

to enhance the precision of target identification reducing the likelihood of unintentional injury to non-combatants and infrastructure. The ability to precisely and efficiently target key objectives while minimizing collateral damage to civilians greatly enhances the overall effectiveness and morality of military operations.

In conclusion, the ability to shape the deep fight at division and higher echelons during LSCO drives significant investments into programs like TITAN (PEO IEW&S, 2022). Incorporating AI, ML and RPA into programs like TITAN while utilizing advanced sensor platforms presents a technical edge that will be crucial in overcoming enemies in future conflicts. These technological breakthroughs enhance the ability to sense deep, accelerate the decision-making process, allow the implementation of adaptive targeting techniques, streamline cooperation, decrease cognitive burden and avoid unintended harm. Through the utilization of these technologies, the Army can augment operational efficacy and sustain a competitive advantage in complex and rapidly changing operational environments.

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[NOTE: The purpose of this article is to improve multinational fires interoperability utilizing ASCA protocols and provide responsive fires across the European Theater.]

Background. Dynamic Front is the European Theater's premiere integrated fires exercise involving North Atlantic Treaty Organization (NATO) Allies and partner nations. This U.S.-led exercise focuses on fires interoperability, fires planning and command and control (C2) at distance. Dynamic Front exercises NATO fires integration at the battalion (BN) and above level, exercising the digital kill-chain across the fires enterprise. Additionally, units train interoperability across the human, procedural and technical domains while simultaneously exercising the mission command capabilities of the Allied Rapid Reaction Corps (ARRC) (HICOM).

Dynamic Front 22 Artillery Systems Cooperation Activities (ASCA)

MAJ Karl B. Kunkleman

Dynamic Front 22's exercise design validated the ARRC's ability to conduct dynamic target allocation and fire mission processing through subordinate firing elements; provided a proof of concept to deploy a Multinational Field Artillery Brigade (MN FAB); and trained Artillery Systems Cooperation Agreement (ASCA) protocols. The exercise comprised of over 2,800 personnel from nineteen countries, including six ASCA members. Dynamic Front 22 successfully refined best practices for integrating multinational personnel into the staff and to control and execute fires through the European multinational fires enterprise.

Recommendations

- ASCA is a multinational interoperability software program interface designed to allow multinational fire control systems to share data utilizing the same upper tactical internet (TI) network and defined as the Mission Partner Environment for Dynamic Front exercises. The Mission Partner Environment is a NATO SECRET RELEASABLE upper TI network. ASCA requires appropriate system classification aligned with the network classification requirements across multinational formations and allows for

using national federated mission networks. Authorization is required for all nations/units to operate on the federated mission network (FMN) or have an approved cross-domain solution to federate onto the network. Key to network federation is physical network validation at the final planning conference (FPC) and a published Join, Maintain and Exit Instructions (JMEI).

- Visualization of mission flow can be challenging when executing ASCA messaging. Referencing ASCA 007 (Commanders Operating Guidance)¹ is essential in developing the task organization and guidance's that allow for seamless fire control system integration. All commanders' fire direction personnel and staff require access to ASCA 007 and National Interface Operating Procedures (NIOPs) to build a shared understanding of capabilities across national fire control systems. Additionally, units should develop

analog flow chart diagrams that depict the system platforms, mission flow and communication network used to distribute data to identify potential frictions in fire mission processing before execution. Identifying friction points and locations where swivel chairs are unavoidable facilitates the safe and expedient data flow between nations.



NATO soldiers discuss coordinates during a multinational live-fire training as part of Exercise Dynamic Front 22 (DF22), Grafenwoehr Training Area, Germany, July 17, 2022. (Photo by SPC Dominique Crittenden, 5th Mobile Public Affairs Detachment)

- A best practice is to require all nations' fire control systems physically connect to the NATO releasable network during the FPC and conduct ASCA 040 testing. ASCA 040 testing consists of nine messaging tests incorporating the entire fire architecture to validate ASCA messaging. To accomplish this task, join, maintain and exit instructions, the network manager must publish JMEI before the FPC. All participating nations must meet the classification and system federation requirements to join or be hosted on the network.
- Extend ASCA University to a six-day model that encompasses training (U.S. only), testing and validation of the database and data distribution, culminating in a digital fire support validation exercise executed by the unit. All participants will execute ASCA University with the assigned IP and NATO Alias on a closed network, open IP switch. At the end state, all units connect to the live NATO releasable FMN network and are ready to execute operations immediately.

Discussion Points

- Technical competence, lack of emphasis on digital sustainment training and pre-operation network federation have degraded the interoperability and functionality of the ASCA interface across the Fires warfighting function. This degradation across the technical domain resulted in an overreliance on the human and procedural domains to execute multinational fire missions. Additionally, systemic training shortfalls in fire direction and establishing a fires communication PACE plan with issued equipment further stressed the procedural and technical interoperability domains inside the digital kill chain, increasing fire mission processing times.
- Digital fire control system classification requirements and operating parameters vary by ASCA nation. Most fire control systems of ASCA nations are classified as “restrictive” based on national classification requirements when conducting live fire. Increasing the classification to “secret” presents additional information security barriers for these countries requiring additional clearances and associated manning concerns to operate these fire control systems at higher system

classification. This results in ASCA nations resorting to cross-domain solutions to transfer ASCA messages across the different security classifications if the nation has developed and fielded a cross-domain solution and, worst case resorting to a ‘swivel chair’ between systems.

- During Dynamic Front, the Italian Liaison Officer (LNO) team employed their tactical fire direction system, Sistema Informatico di Reggimento di Artiglieria (SIR), as an unclassified system and were unable to adjust their classification without additional resources and approval. This system was not approved on the Authorization to Operate (ATO) memorandum provided by U.S. Army Europe and Africa (USAREUR-AF), preventing them from connecting to any live network outside ASCA University. The inability to connect to the network forced the liaison officer (LNO) to execute ‘swivel chair’ mission processing for all fire missions, significantly increasing the overall processing time. A cross-domain solution through the German ASCA gateway could provide a cross-domain solution to address this issue; however, the decision to change the task organization of the Italian Field Artillery battalion never occurred.
- Currently, two versions of the ASCA software are in use, version 7.02 and version 5.4.1.1. These versions are not backward compatible, requiring commanders to utilize the lowest common denominator across the task



British and Romanian service members observe map coordinates during a multinational live-fire training as part of Exercise Dynamic Front 22 (DF22), Grafenwoehr Training Area, Germany, July 17, 2022. (Photo by SPC Dominique Crittenden, 5th Mobile Public Affairs Detachment)

organization. Few member nations have currently fielded version 7.02. Great Britain (GBR) employs the Fire Control Battlefield Information System Application (FC BISA) with separate ASCA version interfaces that cannot currently communicate. The ARRC and MN FAB operated on FC BISA 4.0, capable of executing ASCA V5.4.1.1, while the 26th RA and 1st RHA operated on FC BISA 4.2, capable of executing ASCA V7.02. Unfortunately, these two versions cannot communicate, requiring a 'swivel chair' to transfer firing data between the MN FAB to the GBR BNs, increasing processing time.

- Tactical Communications Information System (TACCIS) (UK SECRET) network facilitated C2 and fire direction communication between the ARRC to the MN FAB while the Mission Partner Environment (MPE) (U.S. NATO SECRET) network provided connectivity from the ARRC, through the 41st Field Artillery Brigade (FAB) LNO team, to the 41st FAB. This resulted in confusion, information loss and increased mission processing times. A cross-domain solution was not established between these two networks, resulting in a break in digital communications. This network design invalidated all network testing completed during ASCA University since ASCA University was executed on a closed network with an open IP switch.
- ASCA University focused on understanding interoperability across the ASCA community and participating training audience. The key objectives of ASCA University were to validate the existing databases, distribute data between fire control systems, execute ASCA 40 testing procedures and limit technical dilemmas or disruptions across ASCA data distribution in a controlled, closed-network environment.
- Integration of Fort Sill ASCA subject matter experts (SME) before the execution of training is highly recommended to ensure teaching and testing procedures comply with the most up-to-date information and system capabilities. Additional integration of these individuals in the planning process did not occur and resulted in avoidable friction before the execution of ASCA University and Dynamic Front 22.

- Database development and validation must remain consistent with the NATO STANAGs and AARTYP-1.² The 56th Artillery Command, with assistance from the theater ASCA Lead and Fort Sill ASCA SME, must validate the database before publishing. Initially, the database had incorrect Unit Reference Numbers (URN) and NATO Aliases. This resulted in a directed database reconstruction during ASCA University, requiring revalidation before the dry and live fire. We recommend a standing exercise database across all NATO field artillery exercises.

Conclusion. The Dynamic Front exercise series continues to grow in complexity each year. The ability for Allies and Partners to continually progress along the three domains of field artillery interoperability must extend beyond the execution of ASCA University and the Dynamic Front exercise dates. Each year, incremental increases in technical, procedural and human fires competencies were shown during the exercise. As units prepare for Dynamic Front, the expectation is that the lessons observed and identified are trained and improved so the European Fires Enterprise can continue to advance rapidly in delivering lethal fires.

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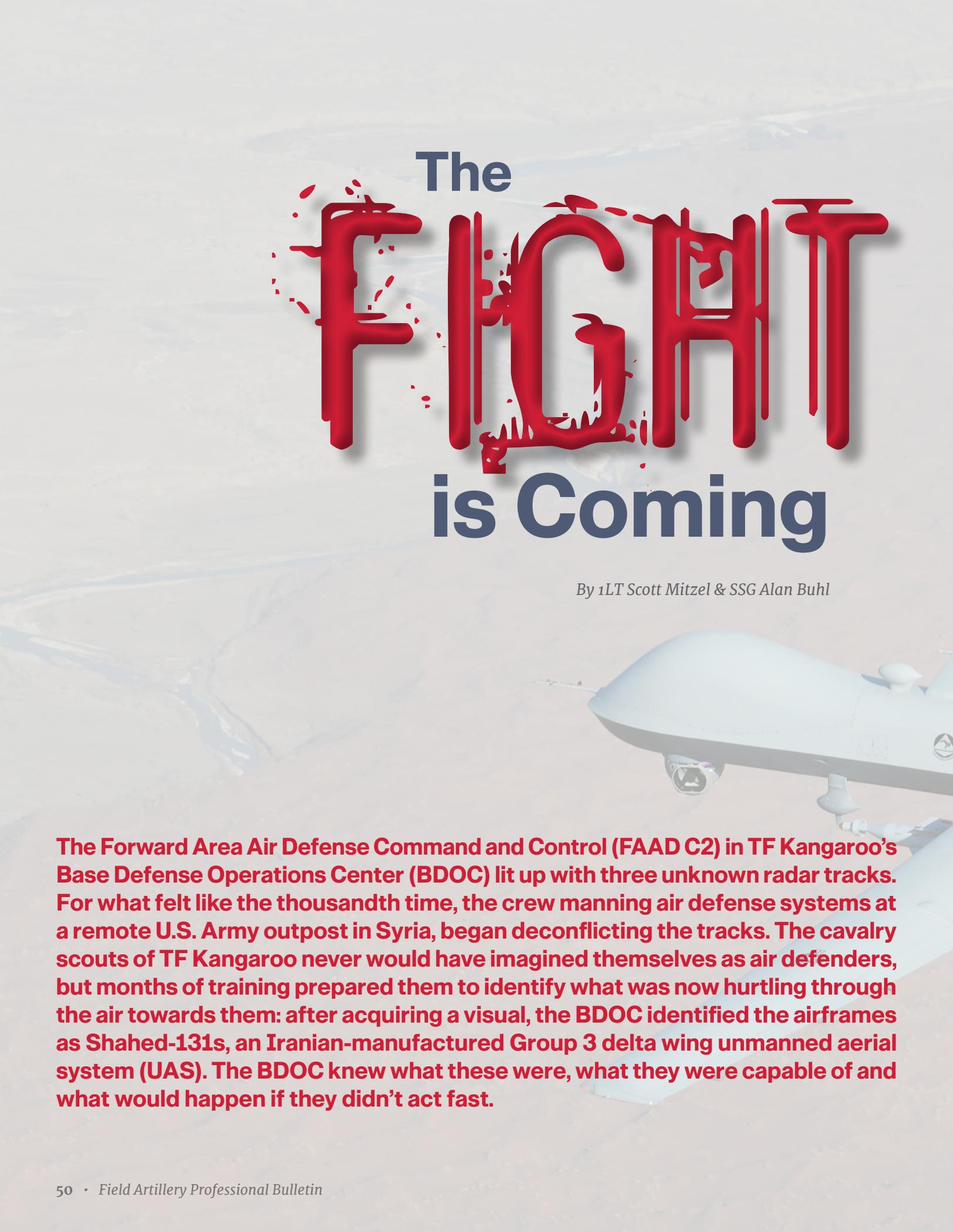
Endnotes

1 - ASCA 007-05-04, Artillery System Cooperation Activities (ASCA) Based on Joint Interoperability Programmes, 21 March 2018.

2 - NATO STANDARD AARTY P-01, NATO JOINT FIRE SUPPORT (JFS) PROCEDURES FOR LAND OPERATIONS, Edition D, Version 1, April 2021.

Polish soldiers with 2nd Battalion, 5th Artillery Brigade conduct a fire mission using AHS Krab 155mm self-propelled howitzers during exercise Dynamic Front 22 at the 7th Army Training Command's Grafenwoehr Training Area, Germany, July 20, 2022. DF22, led by 56th Artillery Command and U.S. Army Europe and Africa directed, is the premier U.S. led NATO Allied and Partner integrated fires exercise in the European Theater focusing on fires interoperability and increasing readiness, lethality and interoperability across the human, procedural and technical domains. (U.S. Army photo by Markus Rauchenberger)



The background of the page is a faded aerial photograph of a desert landscape. In the lower right foreground, a large, light-colored aircraft, possibly a Predator or similar UAV, is visible from a high-angle perspective. The title text is overlaid on this background.

The FIGHT is Coming

By 1LT Scott Mitzel & SSG Alan Buhl

The Forward Area Air Defense Command and Control (FAAD C2) in TF Kangaroo's Base Defense Operations Center (BDOC) lit up with three unknown radar tracks. For what felt like the thousandth time, the crew manning air defense systems at a remote U.S. Army outpost in Syria, began deconflicting the tracks. The cavalry scouts of TF Kangaroo never would have imagined themselves as air defenders, but months of training prepared them to identify what was now hurtling through the air towards them: after acquiring a visual, the BDOC identified the airframes as Shahed-131s, an Iranian-manufactured Group 3 delta wing unmanned aerial system (UAS). The BDOC knew what these were, what they were capable of and what would happen if they didn't act fast.

As the tracks began vectoring toward the forward operating base, TF Kangaroo sprang into action. Several callouts rang in the operations center: bearing, range, altitude, time to closest approach. Utilizing their defense systems, they engaged the hostile UAS with their Raytheon Coyote surface-to-air missiles. As the UASs began to dive down towards the friendly forces, three missiles streaked from the launcher in a desperate attempt to knock their targets out of the sky. Tense seconds passed as the staunch air defenders waited for the impact of the intercepting missiles. Just as it seemed like they had launched too late to save the lives of the U.S. Service Members and coalition forces on the outpost, one and then two missiles struck and destroyed two of the incoming UASs. Tragically one of the missiles buzzed past its target while the third and final drone impacted and detonated on the outpost, wounding two partner force Soldiers. Following the incident, the crew of the BDOC determined that their countless hours of training had built skilled competency in Countering Unmanned Aerial Systems (C-UAS) and had minimized the damage and casualties (Gordon, 2023).

While the Soldiers of TF Kangaroo were in a static defensive posture, the principles of conducting C-UAS remains the same for maneuvering formations. Field Artillery (FA) Soldiers need to be prepared for Multi-Domain Operations (MDO) in Large Scale Combat Operations (LSCO). Soldiers should study lessons learned from this engagement and other recent conflicts. The Army, specifically FA Soldiers, should study to identify UASs, report accurate locations and become competent in these skills through integrating C-UAS into training progressions.

Operations in Ukraine have provided an important lesson in small unmanned aerial system (sUAS) employment. Russian and Ukrainian forces have had near complete freedom of maneuver to collect and strike targets with both civilian and military drones of a variety of sizes. Ukrainians have utilized sUAS to great benefit; they exploit the technology for its low cost, both monetarily and to the force, for great payoffs. Small UAS available for under \$300 can be used for close-fight intelligence, surveillance and reconnaissance (ISR) and munitions delivery. These sUAS can fly above audible range and simple modifications like taping over lights make them difficult to spot without radar or other electronic warfare (EW)

assistance. Open-source intelligence sUAS point of view videos available on Twitter and Reddit often show their targets totally unaware of the imminent threat to themselves as an armed sUAS hovers overhead, looking straight down at their targets. One notable example of the utility and ease of use of sUAS is of a Ukrainian teenager responsible for relaying the live locations and movements of a Russian armored column to Ukrainian artillery, resulting in over 20 vehicles destroyed, including several tanks (Arhirova, 2022). We must assume our enemies are studying the tactics of the Russo-Ukrainian War. However, this is not a new or evolving tactic; this is not a Russian or Ukrainian tactic and it is not going away. The use of sUAS as weapons of war is a baseline. If you cannot defend your formation from it, you are vulnerable to it. We need to prepare for these types of scenarios.

Commanders at all echelons and functions need to be familiar with the UAS threat and C-UAS fight. From ATP 3-01.81: “Units should always assume the enemy is using a UAS to observe or attempt to observe them.” Following that point shortly is: “Contact with unidentified unmanned aerial vehicles (UAVs) may be a precursor to an imminent attack. All units who were in the UAV’s path should assume they were observed and prepare for indirect fire on their positions.” Given the ease of use and concealment and availability of cheap commercial sUAS, it should be assumed that your unit is under constant observation and that an attack is simply a matter of prioritization for the enemy. The sUAS threat is assumed to be constant and every unit in a combat theatre must be versed in the C-UAS fight because every unit will be in the UAS engagement area. While the days of counterinsurgency have already loosened the idea of ‘frontlines,’ the introduction of UAS to the battlefield has ensured that all are party to the threat of direct engagements. The brigade air defense cell is unlikely to detect smaller group one and two sUAS and just as unlikely to be able to respond; it is incumbent on the spotted or affected unit to deal with unidentified sUAS.

Education is the greatest advantage we can easily gain and the skills needed to conduct C-UAS can be trained in numerous ways. Given the proliferation of UAS in the modern battlefield, it is critical and essential to include C-UAS in training progression. Soldiers need to be trained to recognize UASs from multiple countries and manufacturers to accurately recognize the potential threats they

face. First, introduce visual aircraft recognition into table progressions. For example: include aircraft identification on the 13B and 13F skill level 10 written tests. Forward observers already train to recognize enemy ground and manned air assets; it is time to include UAS and expand to all Soldiers.

In addition to recognizing specific platforms, Soldiers should also train to classify aircraft with “WEFT,” (Wings, Engine, Fuselage and Tail). WEFT is outlined in TC 3-01.81 and standardizes description of visual features of aircraft, which may be used by listeners or readers to identify an airframe that a reporting observer could not identify. The importance of WEFT comes into play when you see side by side comparisons of our UAS next to peer-threat UAS. By acknowledging that threat UAS have a similar appearance to friendly UAS, it becomes apparent that detection and identification are not enough; a unit must remain vigilant and report “suspect” UAS to your higher echelon for deconfliction and verification that the spotted UAS is friendly or enemy.

The ability to recognize a UAS is only the start of the problem. Just as important as knowing what an observer is seeing, is knowing where they are looking. Aircraft are mobile and fast; delays in reporting chains make it difficult to accurately pin down a location for C-UAS or Air Defense elements. Creating a skillset for identifying where a UAS is, in space and time, will create a force able to accurately report and respond. Training Soldiers to report UAS will allow maneuver commanders to understand when and where they are being collected on and will be able to report to higher elements when they need to employ C-UAS assets. Department of Defense (DOD) installations all have a variety of UAS platforms. Use these assets and have Soldiers practice calling up SPOT reports of their Bearing, Range and Altitude (BRA).

Understanding the process of defeating UAS is no different than targeting: Detect, Decide, Defeat and Assess (D3A). Counter UAS cells operate under the same guidelines, but with different timelines and methods. Detect: eyes, ears, radar. Decide: Is the aircraft displaying hostile intent? Is it moving towards a friendly element? Does it appear to be carrying a payload? Defeat: What surface-to-air assets can be used as an effector? The size of the UAS will dictate the effector used. Assess: Was the engagement successful? If not, why? FA Soldiers have the benefit of being well-versed

in conducting procedural-based drills, across multiple systems, as a team. Through training and rehearsals, this process is punctual and allows for decisive engagement of threats. Further simplifying the process is the fact that 13 series Soldiers have a command support relationship that facilitates training with maneuver elements. With this in mind: we as FA Soldiers can provide the base of knowledge, equipment and capabilities that other branches may not be as capable or ready to shift to, to meet the Army’s C-UAS needs.

In the book “Seven Seconds to Die,” John Antal references how the Armenians’ static defenses were not constructed to obscure operations within their defensive perimeter. The Armenians had numerous failures, but their complacency in position improvement was one of the most fatal and resulted in thousands of casualties from hostile sUAS (Antal, 2022). The Army needs to train for C-UAS during LSCO to avoid making the same mistake as the Armenians. As shown in the second Nagorno-Karabakh War, Armenian forces had not prepared to defend against an enemy using UAS. Defense and offense against UAS need to be rehearsed in conjunction with normal training progressions. Through training, units can then refine processes and we will improve as a force. One of the best defenses from an enemy is to remain undetected; conducting proper site selection in the field is critical to ensuring units are not telegraphing their location. Small UAS should always be a planning consideration for site selection; commanders need to be aware and develop courses of action with sUAS in mind. One tactics, techniques and procedure (TTP) from ATP 3-01.81 suggests units make use of organic sUAS e.g., Ravens to self-assess visibility to the enemy when occupied in any location in the field. Once emplaced, Field Artillery units without UAS defeat capabilities still impact the overall C-UAS mission by sending SPOT reports using the WEFT and BRAS system. By incorporating these considerations and processes, an FA unit can still function in the C-UAS fight as a sensor node in the Air Defense Early Warning system.

Just as the Soldiers of TF Kangaroo found themselves in a hostile environment conducting unfamiliar operations, the Army and specifically the Field Artillery community need to prepare for similar mission sets. The FA community needs to be trained to identify aircraft, report accurate locations and become proficient in

these skills through integrating C-UAS into training progressions. We cannot fall victim to the assumption that someone else will solve the problem for us. We all have a responsibility to find solutions to tomorrow's problems, today.

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1LT Mitzel and SSG Buhl operate as the AAAB BDOC Battle Desk during the escalation of conflict through the CJOA caused by the Hamas terrorist attacks of October 7th. As of November 4th, their crew has downed 8 enemy OWUAS and currently accounts for the most real-world C-UAS and SHORAD engagements in the United States Army.

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From top to bottom: An Iranian Mohajer 6, capable of ISR and armed attack mission sets; an Iranian Shahed-129, visually similar to the American MQ-9; a Coyote missile, just launched from its pallet; an American MQ-9 Reaper, on which the Shahed-129 was based; an Iranian Shahed-131, a point-to-point crash attack UAS.

Testing the Newest Army Long-Range Weapon Systems: Long-Range Hypersonic Weapon and Mid-Range Capability

By MAJ Edward Richardson, CPT Bol Jock,
SSG Maggie Vega & Mr. Mark Colley



The Long Range Hypersonic Weapon (LRHW) system. (Photo: Lockheed Martin)

Abstract

This article asked the question: how does the Fire Support Test Directorate (FSTD) assess new weapon systems like Long-Range Hypersonic Weapons (LRHW) and Mid-Range Capability (MRC)? In answering such a question, the Army's Test and Evaluation Policy suggests a framework of continuous evaluation (CE) to provide assessment of a system during development (AR 73-1). Accordingly, FSTD uses principles of CE to execute an observation strategy parallel to LRHW and MRC exercises, experiments, demonstrations and training. The key task is to catalogue observations and cross reference those observations with Army capability requirements to reduce the costs of manpower, time and equipment associated with a larger singular test. This article provides details of FSTD's observation strategy and recommends CE principles of new and existing artillery systems. The implication of this strategy is an optimized process for assessing the effectiveness, suitability and survivability (ESS) of new weapon systems and a way to assess the continued performance of fielded equipment.

Background and context

The starting point of understanding our current hypersonic weapons capability gap and developing solutions to close such gap is looking into the past for lessons. Particularly, there are several instances where the United States military was surprised by the technological advances of other countries, leading to playing a catch-up game. However, the U.S. often discovered ways to rapidly catch up and surpass its competition. For example, at the start of World War II, the U.S. Field Artillery guns were behind the Germans. In fact, "American artillery was armed with obsolete French guns that were transported via horses and unreliable trucks." We can argue that there was no need for advanced artillery systems before WWII, leading to the U.S. complacency in improving its artillery systems. However, when the need arose for a more capable artillery system during WWII, the U.S. developed, fielded and effectively deployed an advanced artillery system within two years. Instead of replicating German artillery guns by increasing guns' ranges, the U.S. focused on building better artillery systems, which included improving weapon accuracy and employing advanced observation platforms. This

approach to closing the capability gaps allowed the U.S. to utilize planes as observers, which led to a significant advantage for the U.S. artillery systems. Today's power competitions could be compared to the artillery capability gaps in WWII.

Framing the Problem

Like the situation in which the U.S. found itself in WWII, the U.S. is in competition with several near-peer adversaries regarding hypersonic weapon capabilities. According to the Government Accountability Office (GAO), even though the development of hypersonic technology has been an ongoing effort for the U.S. government since the 1950s, less emphasis was put on its use as an offensive or defensive weapon system until recently. Currently, the Army is fielding and prototyping two variations of hypersonic weapons. By utilizing the middle tier of acquisition (MTA) pathway, the Army intends to win the hypersonic capabilities competition.

This article seeks to answer the question: How does the FSTD assess new weapon systems like LRHW and Mid-Range Capability MRC? Due to bureaucratic, complex and risk-averse cultures within Department of Defense (DoD) acquisition programs, "the technological superiority of the United States is now being challenged by potential adversaries in ways not seen since the Cold War." As a result, the U.S. is required to adapt to the rapidly changing global power competition. However, to adapt to such changes, there is a need for revisions to the acquisition process and operational tests. MTA aims to streamline this process to tackle the lengthy timeline associated with major capability acquisition (MCA).

Recommendations

The MTA Pathway is intended to fill a gap in the defense acquisition system for those capabilities with a level of maturity that allows them to be rapidly prototyped or fielded systems within five years of the MTA program's start. The programs using the pathway aim to accelerate capability maturation before transitioning to another acquisition pathway or to minimally develop a capability before rapidly fielding. The MTA methodology has two pathways: rapid fielding and rapid prototyping. A key point that can be derived from these two strategies is that there will

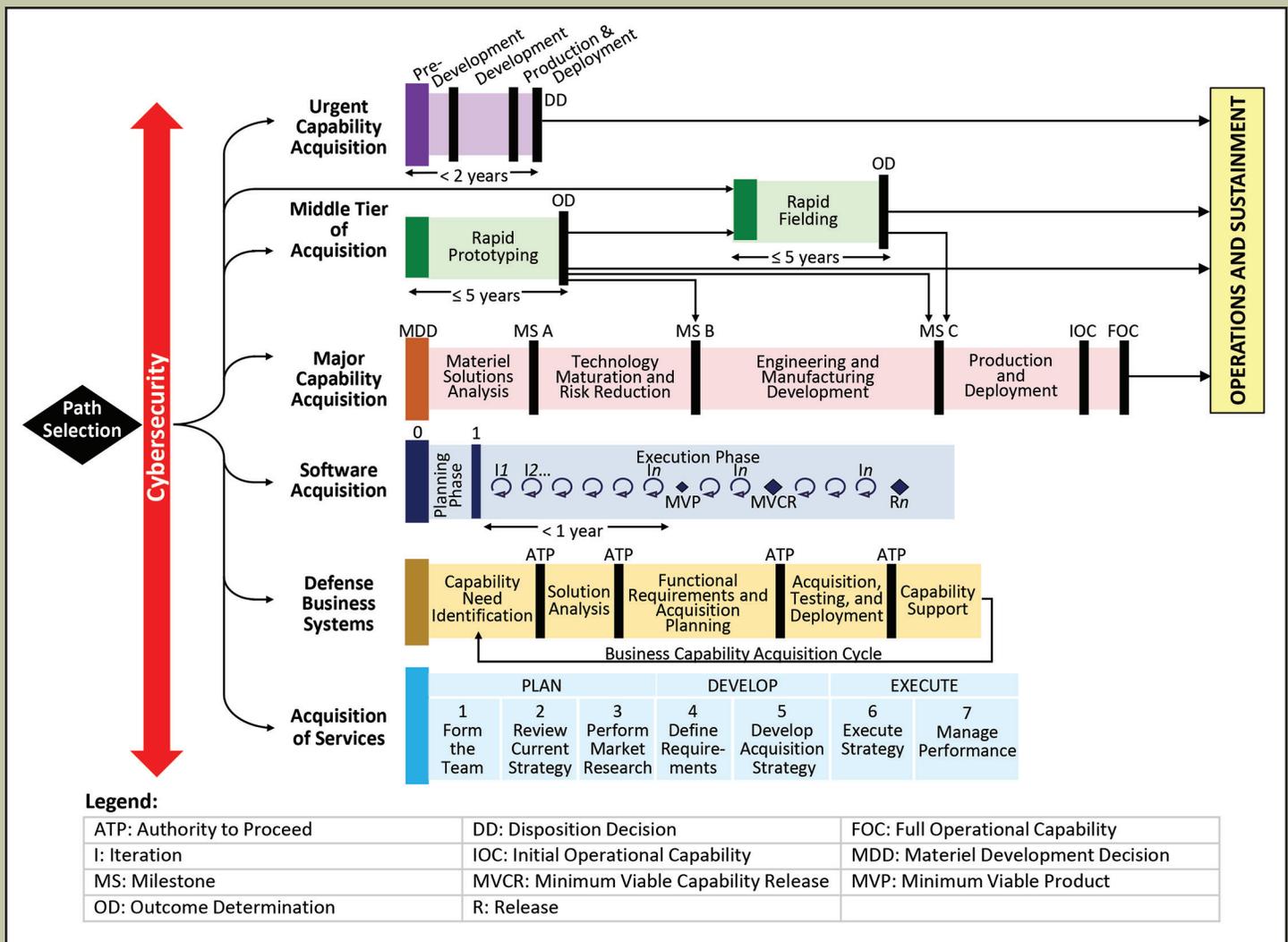


Figure 1: Adaptive Acquisition Framework

need continuous coordination and involvement among all the stakeholders. These strategies also introduce challenges to the testing community, such as the complexities of program integration, the different categories of monies required and the multifaceted decision-making web needed to provide relevant test data as seen in Figure 1 effectively.

Rapid Prototyping. Rapid prototyping (e.g., MRC) test strategies set evaluation criteria and milestones for technology maturity and prototype performance, culminating in an operational demonstration of the fieldable prototype in an operational environment. Progressive operational and live fire assessments of capabilities and limitations, based on data from incremental integrated test events during the prototype development program, should be included in the test strategy.

Rapid Fielding. Rapid fielding (e.g., MRC and LRHW) test strategies will answer evaluation criteria and inform milestones decisions to demonstrate the performance of the proposed products or technologies for current operational purposes. Rapid fielding decisions should be based on integrated developmental and operational testing that demonstrates how the capability fulfills the warfighter’s mission or the concept of operations (CONOPS). As rapid fielding programs will begin production within six months of the program’s start, they typically will rely heavily on previous testing to support this accelerated timeline. The test strategy will identify all prior testing and specify the additional testing necessary to address differences between the tested prototype and the planned production configuration.

Limitation to MTA: With MTA (e.g., rapid prototyping and rapid fielding), the focus is on



The delivery of the first prototype hypersonic hardware to Soldiers of the 5th Battalion, 3rd Field Artillery Regiment, 17th Field Artillery Brigade is completed on Oct. 7, 2021, with a ceremony at Joint Base Lewis-McChord, Washington. (U.S. Army photo by SPC Karleshia Gater, I Corps Public Affairs)

providing systems to warfighters in a timely manner, leading to several limitations in using this acquisition strategy. Firstly, MTA uses an abbreviated capability development document (A-CDD), presenting limited evaluated criteria for assessing the systems. Therefore, while FSTD may collect data on the MTA systems, an operational test may still be required to validate all the requirements. Second, MTA systems do not meet full system requirements, as Soldiers may develop shortcuts to the required procedures during the assessment. As a result, data collected during rapid fielding and prototyping exercises may not represent the full capability of the systems. However, to mitigate those shortcomings, operational test agencies (OTA) such as FSTD must be involved in the exercise planning process to effectively assess critical operational issues criteria (COICs) during the unit's training exercises. Embedding in the unit's planning and execution allows data collectors to capture reliable information that can be evaluated against

the COICs. Recognizing the limitations of MTA pathways, continuous evaluation and assessment aimed to mitigate those shortcomings.

Continuous Evaluation and Assessment: Recognizing the need for a simpler and faster acquisition pathway, the Congress directed DoD to use mid-tier acquisition (MTA) to rapidly prototype and field new weapon systems. As outlined in AR 73-1, the continuous evaluation and assessment process is a key method at which this article is centered and the strategy for FSTD to assess MTA programs, namely LRHW and MRC. Accordingly, T&E, in support of rapid capabilities such as the LRHW and MRC, must be agile in support of more urgent fielding schedules. The FSTD will embed itself early into the program's lifecycle to document progress through continuous evaluation and observations of key events. The FSTD anticipates reduced test time and costs through comparative analysis, data sharing and the use of all credible data sources. This CE



The Army's Rapid Capabilities and Critical Technologies Office's Mid-Range Capability Project Office, in conjunction with Soldiers from 1st Multi-Domain Task Force, and the U.S. Navy Program Executive Office Unmanned Aviation and Strike Weapons, successfully demonstrated the launch of a Tomahawk missile from the Army's prototype Mid-Range Capability system on June 27, 2023. (U.S. Army photo by Darrell Ames, Public Affairs Officer, Program Executive Office Missiles and Space)

process, informed by the results of developmental and operational testing, supports senior leader decisions for full deployment.

Observation Plan. Observations are conducted during unit training events and can be broken down into two types: observations prior to the acquisition decision memorandum (ADM) when the system is a prototype and observations post ADM when the system is a program of record. Observations should be documented by the OTA in a Memorandum of Observation (MoO) and shared across the enterprise. Observations of prototype and field systems can be used for a variety of purposes, including informing unit tactics, techniques and procedures (TTPs); capabilities and limitations reports/safety releases; informing

requirements for the program of record; and helping to integrate the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy (DOTMLPF-P) of the system. Given that these observations are conducted on prototypes, they should not be included in the OTA's operational demonstration of the system.

The Fire Support Test Directorate supported two operational exercises for the LRHW fielding system and published a MoO for both. These observations were provided to the unit, the material developer, the system evaluator and the capability developer for their use as appropriate. Observations conducted post ADM of program of record systems can be valuable if carefully planned and approved

at the appropriate level. These observations can be used to buy down program risk for the project manager and descope the operational demonstration required in the acquisition process. As LRHW and MRC are issued and employed, the program manager has an opportunity to get credit for meeting the requirements of the system outside of the operational demonstrations. These opportunities, for example, include operational exercises with joint and coalition partners.

Conclusion

Rapidly closing the capability gap is the main aim and the advantage of using MTA. With rapid fielding (i.e., LRHW) and prototyping (i.e., MRC), a needed capability can hit warfighters' hands within two to five years, making this acquisition pathway ideal for developing timely capabilities for warfighters. In alignment with MTA's aim for rapid prototyping and fielding, FSTD implements incremental and continuous evaluation for the Army's newest weapon systems (LRHW and MRC).

Continuous evaluation involves incremental observations of the systems as the units employ them. Unit training plans provide the structure for the execution of continuous testing for FSTD. As FSTD observers embed themselves with LRHW and MRC batteries during their training exercises, the FSTD data collectors can gather data that can be credited to units during operational demonstrations. This approach decreases time and resources informing milestone or production decisions, as much of the data would have already been collected during incremental observations. Such incremental observations are provided to program managers and software developers to improve weapon systems or annotated as credits for operational tests. This positive feedback loop reduces acquisition time, which aligns with the overall aim of the MTA: rapid prototyping and rapid fielding.

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A Business Management Approach to Organizational Leadership Development

CPT Yunyi Zhou

Introduction

There is no standard playbook for a successful command. While many commanders share essential skills and practical tactics, techniques and procedures (TTPs) to lead formations, few provide timely perspectives on leading complex organizations in a pandemic transformed world.

I was privileged to command a battalion and subsequently a brigade level headquarters and headquarters battery (HHB) in 210th Field Artillery Brigade, a multiple-launch rocket system (MLRS) unit forward positioned at the Republic of Korea. My 22-month tenure allowed me to interact with an extensive population and be experimental in my leadership style and approaches. Further, the experience of reacting to COVID and regenerating force readiness in the aftermath provided me with invaluable insights into leveraging relationships and managing crises.

On the professional development front, I found the literature on business management and corporation leadership adapting to the impact of the pandemic timely and thought-provoking. Not only did it provide me with framework and methodology for leading headquarters, but it also helped me self-regulate and navigate stressful situations. This is why I decided to use a business management lens to examine my course of organizational leadership development: Section I describes command influence on unit climate and culture; Section II discusses time management strategy in line with prioritization; Section III emphasizes the importance of tasks that only commanders can do. In doing so, this article aims to stimulate ideas and discussions on requirements for pre-command development, scope and curriculum of professional military education (PME) and the arts and science of people-mission alignment in today's complex and uncertain environment.

Section I: Climate vs Culture

It is paramount for commanders to understand the distinction of organizational climate from culture as each has unique considerations when it comes to affecting changes and driving results. Oxford

Review defines that organizational climate is the atmosphere people feel on a day-to-day basis, whereas organizational culture is the underlying shared values, beliefs, traditions and norms shaping perceptions and behaviors (Wilkinson, 2017). To put in a military context, the incoming commander can sense unit climate simply through the execution of change of command (COC) inventory (ask questions such as when was the COC schedule disseminated? Do hand receipt holders understand bill of material (BOM) and expectation of the layout? Do Soldiers complain about early mornings and late nights?) Gauging unit culture, however, requires him/her to interact with most members and observe thinking patterns and actions in various settings.

With this distinction in mind, commanders need to deliberately manage relationships in support of the unit mission. As illustrated in Table 1: Climate and Culture Alignment with the Mission, a protect-the-force mission during COVID entailed a healthy unit climate heavily driven by first line leaders who were expected to listen to Soldiers' feeling and needs and provide support and resources. Knowing this, first sergeant (1SG) and I directly engaged section leaders and ensured their needs were met.

Unlike unit climate, unit culture is predominantly shaped by the command team. What is that one thing you and your 1SG are trying to sell to your formation and willing to pitch again and again? In light of leadership underdevelopment due to the pandemic, 1SG and I decided upon personal and professional growth as the core value of our unit culture. How does this value show up in daily behaviors? We relentlessly prioritized our schedule for one-on-one counseling with key stakeholders of HHB and helped them develop incremental achievable goals throughout their 12-month tour in Korea. Further, we developed tools and products to facilitate their engagement with Soldiers under them. We also allowed honest mistakes and invited openness to feedback. As a result, qualifying expert on weapons became Soldiers' goals; shops take pride in having their Medical Protection System (MEDPROS) green; older members passed on the skill set to newcomers. In other words, unit culture established and readiness regained.

Section II: Time management

Time is the scarcest resource leaders have. Very few company grade assignments offer a greater opportunity to hone time management skills than a headquarters command. Despite the common belief that relationship management is the most frustrating challenge of leading a HHB, I view the fundamental problem lies in time management.

Prioritization drives time allotment. Consider all the administrative and operational requirements for a battery. The effectiveness of a commander in managing relationship mutually supports the productivity of his team in meeting the requirements from the Army, higher HQ and the installation. If these requirements demand maximal cardiovascular output, the commander will struggle to keep the battery afloat. If meeting the requirements is merely at his basal metabolic rate, he will have room for cardio and strength training and achieve a higher level of fitness. Therefore, understanding the implications of unit requirements is the prerequisite for effective time management.

Prioritization is the arts and science of switching hats between a doer, a manager and a leader — three roles a commander plays. I intend to use Table 2 to illustrate the science part of prioritization by role and percentile. First, the size and complexity of a HHB demands an enormous amount of direct actions and attentiveness from the commander — reviewing and signing documents, counting equipment, attending

meetings and making products. Thus, increasing the productivity of a doer's role is key to the time management strategy of a battery commander. The ideal state for a commander is to only use 50% of his time doing these tasks. As to the how-to for each task, there is a plethora of open-source knowledge and local TTPs amidst the noncommissioned officer (NCO) Corps. Second, the manager role of a commander calls for the ability to develop, implement and maintain systems and processes. This allows the commander to define the role and responsibility of his 1SG, XO and their subordinates, hold each entity in the processes accountable, identify and anticipate points of friction and reduce the effects of personnel turnover. Consider maintenance. In my experience, maintenance is the most complex task at battery level comprised of services and repair. The former is nothing but to meet a requirement with a suspense date while the latter requires accurate diagnoses from the mechanic, accurate parts number, accurate Global Combat Support System-Army (GCSS-Army) entry by the Prescribed Load List (PLL) clerk, successful Post Parked Requisition (Z-PARK) passing and support operations officer (SPO)/S8 auditing, Supply Support Activity (SSA) pick up – the steps go on. Even with a seasoned XO, the commander needs to know the systems and processes in place and works closely with maintenance chief and BN XO. For HHB BDE, maintenance involves maintenance support team (MST) assigned to brigade support battalion (BSB). This introduces more variables to the processes and the relationship with BSB becomes vital to the

	COVID Response	Post COVID
Mission	Protect the force	Regain readiness
Commander's priority	A healthy climate	A positive culture
Key stakeholders	Team/squad/section leaders BDE surgeon, PA, BHO	Command team/BTRY XO Shop OIC/NCOICs/S3/XO
Quantifiable measures	Incidents free (SHARP/EO/	Training matrices,
Intangible measures	Substance abuse/assault) SMs feel safe and supportive	IPCOT applications, Retention SMs are connected to a higher purpose
Key to success	-Listen to individual feelings and needs -Provide support and resources	- Promote personal and professional growth - Control climate by protecting the calendar and training schedule - Collaborate and cooperate with shops - Communicate reality with higher
PA: physical assistance BHO: behavior health officer IPCOT: in position consecutive oversea tour		

Table 1: Climate and Culture Alignment with the Mission

Role	Responsibilities	Key to success	Time Allotment
Doer	Awards Leave UCMJ Cyclic inventory UCFR Meetings SITREP/Products	Productivity	50%
Manager	Additional Duties (EOL, UPL, etc.) Maintenance DTO Property MEDPROS	Systems and processes	30%
Leader	Relationships FUOP Moral Leader's Development	Vision Leadership style	20%
UCFR: unit commander's financial report DTO: daily tasking orders QTB: quarterly training brief LPD: leaders' professional development UCMJ: Uniform code of military justice			

Table 2: time allotment for each role a Battery commander plays.

success of the whole team. Therefore, establishing systems and processes force commanders to build relationships.

Lastly, we arrive at relationship management, a people skill crucial to all senior leaders in today's Army. While managers focus on systems, leaders focus on people. Playing a leader role, the HHB commander needs to deliberately allocate time (ideally 20%) for face-to-face interactions with internal and external entities to develop relationships and cultivate reputations. Emails and Microsoft Teams calls are not effective. An increased efficiency in manager's and doer's role will allow the commander to coach and develop subordinates to reach their full potential, concentrate on mid-long-term planning and resourcing and ultimately lead the organization. In mid-long term, healthy relationships and positive reputation will enforce a collectivist culture which, as discussed in this section, will catalyze mission accomplishment.

Section III: What only the CEO can do

Commanders need to consistently contemplate and adjust the strategy of prioritization. To do so, they must know what only commanders can do. A

glimpse into the realm of business management may give us an idea. Procter & Gamble Chairman A.G. Lafley, in his interview with Harvard Business Review, laid out four specific tasks only an Executive Officer (CEO) can do (Lafley, 2009). I found this highly relatable to an HHB commander since all shops and sections except fire direction center (FDC) are customer oriented. Table 3 is my interpretation of things that must be done by the commander and must be done well to deliver desired training results and take diligent care of the people. Note that these tasks mostly fall into the leader category in Section II and require a vision and servant leadership style from the commander. The overarching principle is to view the Soldiers in your formation both the product and the customer of your corporation.

Conclusion

Through three Sections, we have drawn insights from successful business, shared wisdom from renowned field experts and sprinkled in some of my personal experiences as an HHB commander. Indeed, battery command profoundly shapes an officer's leadership style and propels the leap from direct to organizational level thinking. For more insights on organizational skills, I recommend two

articles from my fellow commanders: HHC Command — Challenges and Opportunities by CPT Matthew Tetreau (Tetreau, 2020) and Surviving Headquarters Company Command by CPT Scott Nusom (Nusom, 2016).

ADP 6-22, Army Leadership and the Profession, is a timeless publication. It describes Army values, leaders’ competencies and characteristics and the traits of Army profession. Since its last update in July 2019, the Army has experienced COVID19 pandemic, recruiting shortfalls, mental health challenges and a number of contemporary societal problems. The pandemic, in particular, amplified the uncertainty in operational environment and caused deficit in leadership development in the rank of junior NCOs and officers who are essential to messaging commander’s priority and fostering unit inclusion and cohesion. I suggest the next publication of ADP 6-22 include crisis management competence and guideline for the transition from direct, organizational, to strategic level leadership.

Lastly, this article aims to stimulate conversations on the strategy of leadership development in US Military. Nowadays, firms and enterprises are facing employee burnout, inflation and economic downturn, digital transformation and other emerging challenges. Their thinking and strategies shed lights on a wide range of opportunities to train and develop creative and agile military leaders who can make work more meaningful, interesting and productive.

It has never been more urgent for senior leaders to reassess our strategy to equip future commanders with knowledge and skills to problems inextricably linked to our society.

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CEO's tasks-Lafley's model	Commander's tasks
Define the meaningful outside	Since HHB is heavily customer based, the entire BDE is your constituency. High stakeholders include command teams, XO, S3, Staff primaries and internal HQ.
Decide what business you are in	We are in a people business. Focus on the core growth of W1-E4 who executes tasks and missions.
Balance present and future	A healthy unit needs both CUOP and FUOP. Your QTB slide drives training resourcing while training calendar and schedule ensure the unit stay on track. 1SG and XO manage CUOP while you control the risk. In response to crisis such as COVID, you need to steer the ship with your C-suite (1SG, XO, PSG's)
Shape values and standards	Values and standards are elements of unit culture. Your presence and daily actions indicate the values and standards you intend to instill to your organization.

Table 3: Commander’s specific tasks in Lafley’s CEO model



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