

FA Journal



A professional journal for the US Field Artillerist



Issue 4, 2024

Presented by:



USFAA

United States Field Artillery Association

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LTG John 'JT' Thomson
US Army, Retired
USFAA Chairman

Dear Members,

I am proud to have been entrusted as the USFAA board's next chairman. LTG (R) David Halverson was in the seat for the last five years, seeing the organization through a global pandemic and soaring inflation, all while adding new programs and member benefits. His example of servant-leadership has been an inspiration to me. I plan to carry on these important initiatives with the same level of excellence demonstrated by our association over the last 100-plus years.

I would like to say Thank you to all of our corporate partners who assist us throughout the year in achieving our Association's mission. Thank you to the Staff at HQ who make the association what it is day in and day out. Thank you to our Board of Di-

rectors, all volunteers, who's guidance of the association will ensure it thrives for another 100 years and beyond and thank you to all 8,000 members. Your membership helps provide programs not only for the membership body, but for the Field Artillery Branch at large. I ask you all to remember that our heritage and traditions live on for future generations because of all of you and your support.

In this season of many celebrations, may Saint Barbara watch over and protect you wherever you go.

King of Battle!

LTG (R) John 'J.T.' C. Thomson III



Recently, the FA OCS Alumni chapter of USFAA held a ribbon cutting for the new FA OCS Heritage Hall at the FA Museum on Fort Sill. Several older buildings on Fort Sill are slated for demolition, so the OCS Museum has transferred its displays to the new building. The space is multi-functional and built to hold events or classes. The FA OCS Alumni chapter raised \$850,000 and donated the completed project to Fort Sill. Many contributed to the project, including Harvey Glowaski, Frank Siltman, Gordon Blaker, Randy & Penny Dunham, Michele Mabry, William Ford, Michael Dooley, Candace Meiler, and the Team at CBDL, who oversaw the project's construction, Michael Brown, Chris Boyd, and Kirsten Sellens. Chapter President William Ford and Garrison Commander COL Derek Baird were on hand to make comments.



Photos by Mike Whetson



UNITED STATES
FIELD ARTILLERY ASSOCIATION

P.O. Box 33027
Fort Sill, OK 73503
www.fieldartillery.org
580.355.4677

MEMBERSHIP:

Subscription to the FA Journal comes with membership in the Association. Individual or corporate memberships may be obtained through the USFAA website at www.fieldartillery.org or by calling 580.355.4677. Dues start at \$30.00 per year for an individual membership for US and APO addresses (International rates may vary).

Members can change their address, email and chapter affiliation online in the member portal at www.fieldartillery.org.

**JOURNAL
CONTRIBUTERS:**

FA Journal
Editor: Rachal Smith
Assistant Editor: Kayla Walker

Field Artillery Professional Bulletin
USAFAS PAO: Judith Oman
Assistant Editor: Chris Gardner
Art Director: David Johnson

USFAA LEADERSHIP & STAFF



LTG (R) JT Thomson
Chairman of the Board



MG (R) Brian McKiernan
President



Rachal Smith
Executive Vice President
rsmith@fieldartillery.org



Sandra Harrison
Director of Operations
sharrison@fieldartillery.org



Kayla Walker
Director of Strategic Development
kaylawalker@fieldartillery.org



Kayla Richert
Store Sales and Admin Asst
krichert@fieldartillery.org



Kerri Barefield
Events Coordinator
events@fieldartillery.org



Kellee Clark
On-Call Events Assistant



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U.S. Marine Corps Cpl. Romeo Rodriguez operates a mounted M240B on a High Mobility Artillery Rocket System during Artillery Relocation Training Program 23.4 at Yausubetsu Maneuver Area, Hokkaido, Japan, March 4, 2024. ARTP provides Marines with 3/12 the opportunity to rehearse live-fire operations across a range of climates and conditions, providing lethal combat ready artillery forces in the Indo-Pacific. Rodriguez, a native of Texas, is a field artillery cannoner with 3d Battalion, 12th Marine Littoral Regiment, 3d Marine Division. (U.S. Marines Corps photo by Cpl. Jaylen Davis)

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The FA Journal continues the tradition begun with the first Field Artillery Journal published in 1911. To publish a journal for disseminating professional knowledge and furnishing information as to the Artillery's progress, development and best use in campaigning to cultivate, with other arms, a common understanding of the power and limitations of each to foster a feeling of hearty cooperation by all and to promote understanding between the regular and militia forces by forging a closer bond, all of which are worthy and contribute to the good of the country.

CONTRIBUTE TO YOUR PROFESSIONAL JOURNAL

What to Submit:

Article submissions do not have to agree with current doctrine, official policy or approved techniques or procedures. Ask yourself how the topic is going to help the artillery community. Only unclassified information can be published in the FAJ. Articles must promote safe techniques and procedures. Be accurate, logical and complete in your writing. Submissions must be clearly written with an evident thesis, no more than 2500 words. Strive to educate, not impress. A message is most clear when written in simple language. If possible please include graphics, charts or photographs to supplement your article.

Preferred Topics:

- Counter-fire at the DIV/Corps Level
- Targeting
- Training at homestation for LSCO
- Fires Support Issues within the EUCOM/PACOM AOR

How to Submit:

www.fieldartillery.org/fa-journal-submission-guidelines

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April 7-

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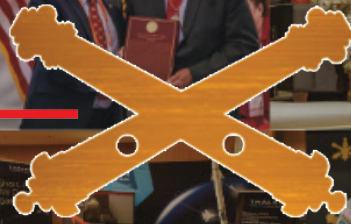
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2025



TENTATIVE SCHEDULE OF EVENTS

7 APRIL

Golf Tournament
at Fort Sill Golf Course

Opening Night Cocktail Event
at the FISTA

Tuesday

8 APRIL

4 Keynote Speakers

4 Branch Panel Sessions

ADA Cocktail Event
ADAA Musical Tattoo
at the ADA TSF Fort Sill

Wednesday

9 APRIL

2 Keynote Speakers

6 Branch Panel Sessions

FA Cocktail Event
USFAA Musical Tattoo
at the Hilton Garden Inn

Thursday

10 APRIL

Continental Breakfast

2 Keynote Speakers

1 Joint Panel Session

SUBJECT TO CHANGE



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- The Debt Clinic



USFAA'S GLOBAL MEMBERSHIP DRIVE

We challenged all chapters during the month of September to join our global membership drive. Every Chapter that reached a 25% growth received an additional \$250 grant on top of their annual chapter check. The top three chapters with the highest percentage of growth during the month received an additional grant.

FIRST PLACE



**TRUMAN CHAPTER
MO ARNG**

The Truman Chapter is named after the most famous former Missouri Field Artilleryman, Harry S. Truman, who served as the 1-129th FAR Delta Battery Commander in WW1, and went on to be the 33rd President of the United States. The chapter's charter was organized on 6 April, 1982. The 1-129th FAR's headquarters is located in Maryville, with 3 firing Batteries located in Albany, Chillicothe, and Independence. The unit is an EAB Battalion aligned with the 130th FAB headquartered in Manhattan KS, as well as the 110th Maneuver Enhancement Brigade headquartered in Kansas City, MO. We promote membership at every level of leadership in the Battalion and advertise what the USFAA does for the Field Artillery Branch as a whole.

SECOND PLACE



**COL Robert R. McCormick
IL ARNG**

The COL Robert R. McCormick Chapter named for the distinguished Artillery Officer and Citizen-Soldier who served in the Active Duty, National Guard, and Reserves. He later became a lawyer, politician, and famous publisher. During WWI McCormick commanded 1-5 FA in the Battle of Cantigny, under the 1st Infantry Division. COL McCormick renamed his estate in Wheaton, IL (suburban Chicago) "Cantigny," which is now the location of the 1st Infantry Division Museum. The McCormick Chapter USFAA encourages membership from Active, National Guard, Reserve, and Retired Soldiers.

THIRD PLACE



**Sky Soldiers
4-319 ABN FAR, German**

The 4-319th AFAR is a U.S. Army's only forward deployed Airborne Artillery Regiment. Assigned to the 173D IBCT (A). The BN HQ is in Grafenwöhr, Germany with Fire Supporters in Italy and Germany. The battalion is nicknamed "The King of the Herd", and has participated in battles from World War 1 to current operations around the globe. The BN's mission is to provide direct supporting fires to the 173rd IBCT (A) and NATO Allies. The unit is skilled in both the art of integrating and synchronizing all available delivery assets and in the science of delivering accurate and timely fires. Paratroopers in the 173rd IBCT (A) can accomplish its tactical task along with supporting any limited contingency or crisis response across the USEUCOM, USAFRICOM, and USCENTCOM AORs.

HONORABLE MENTIONS

This We'll Defend - 434 FA BDE

319th Airborne Field Artillery Regiment - 82nd DivArty



LtCol (R) Michael Grice *Writing* Award 2024

The LtCol (R) Michael Grice Writing Award was established by LtCol (R) Michael Grice and the United States Field Artillery Association to promote involvement in the creation of content for FA Journal publication. It was meant to encourage creative thinking and sharing of ideas among both officers and enlisted, Soldiers, Marines, National Guardsmen and Reservists throughout the branch. Eligibility was open to any new article that appeared in the last four FA Journal issues. The voting panel consisted of Field Artillery Leadership from both the Army, National Guard and USMC. They reviewed these issues and each selected a first, second and third place based on the topic of this year's contest, "Challenge the status quo; What can we as artillerymen do better?". The votes were then compiled to reveal the third-annual winners.

FIRST PLACE

SSG Robert Chambers
1-6 FA, 41st BDE

**Static to Strategic:
Re-Learning to Shoot and Scoot**

Issue 1, 2024



SECOND PLACE

MAJ Donald S. Frazier
1st Armored Division

Control Vs. Coordination: An Argument for the Disaggregation of Graphic Control Measures and Inclusions of the Battlefield Coordination Line into US. Army Doctrine

Issue 1, 2024

THIRD PLACE

**CPT Mike Kelly &
CPT Jack Skillman**
FA CCC

Rocket Artillery, the DivArty, and Long-Range Shaping Fires at the Tactical Level

Issue 4, 2023

HONORABLE MENTIONS

Issue 4, 2023

- Unleash the King of Battle - MAJ Jason Young, MAJ Joshua Herzog, & CPT Chad Bird
- Confronting the Counterfire Dilemma - CW3 William Woods & CW3 Benjamin Grooms

Issue 1, 2024

- Look Up: The Future of Fire Support & Loitering Munitions - 2LT Ryan Lavin
- Looking to the Past for LSCO Inspiration - MAJ Destry S. Balch

Issue 2, 2024

- Precision Partnerships: The Role of Advisors in Targeting - CPT Kaitlin Phelan
- I Found What You're Looking For - MAJ Destry S. Balch

Issue 3, 2024

- 10th Marines: Artillery Modernization and Support to the 2d Marine Division - The Officers of 10th Marines
- HIRAINS: Building a Collection of Best Practices - CPT Andrew Shaughnessy & 1SG Garrett Strifler



PRINT

LtCol (R) Michael Grice
Writing
Award



Articles published in Issue 4, 2024 through Issue 3, 2025 will be eligible for the 2024 writing contest and awards.

- 1st Place Plaque and \$500
- 2nd Place Plaque and \$250
- 3rd Place Plaque and \$100

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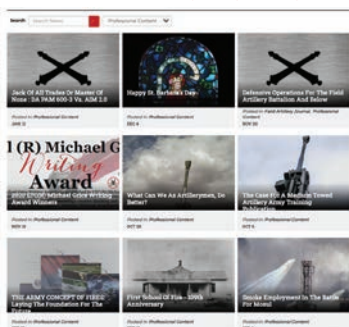
DIGITAL



BLOG

United States Field Artillery Association

Fieldartillery.org/Blog



Social Media



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VIRTUAL & LIVE EVENTS



United States Field Artillery Association's Annual Musical Tattoo



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Musical Tattoo

and

US Field Artillery Hall of Fame 2024



On November 2, 2024, at the Hilton Garden Inn Lawton Ft Sill, the United States Field Artillery Association inducted the U.S. Field Artillery Hall of Fame Class of 2024. This year, the inductions included three Musical Tattoo Recipients, LTG (R) David Halverson, LTG (R) Freddy McFarren, and MG (R) Ricky Adams. The inducted class also included LTG (R) Gary Cheek, MG (R) Guy Bourn, Col (R) Michael Marletto, LTC (R) Brian Birdwell, LtCol (R) Michael Grice, CW05 (R) David Thomas, CW4 (R) Richard Wilkenson, the 18th SMMC, SgtMaj (R) Ronald Green, CSM (R) Harold Shrewsberry, and Connie McDonald. The Association awarded the first William L. Ford Service Award to Mr. William Ford in celebration of his 40 years of service on the USFAA Board of Directors. The FA Commandant, BG Alric Francis, gave a key note address focusing on the great traditions and recent growth of the branch.



HoF Plaques and Medals



BG Alric Francis presenting the keynote address



Mr. William Ford accepting the Service Award for 40 years on the USFAA BoD, EVP, Rachal Smith and Chairman, LTG (R) JT Thomson.



LTG (R) David Halverson, the evening's Musical Tattoo Recipient



The Queens behind the Scenes, Staff Members, Kerri Barefield, Sandra Harrison and Kayla Richert.



President MG (R) Brian McKiernan with CW4 (R) Richard Wilkinson, HoF 2024 Inductee.



Don and DeeDee Armes, Connie and MG (R) Mark McDonald, Craig and Janie Billingsley and COL (R) Kirby Brown.



USMC Alumni (left to right) LtCol (R) Grice, SgtMaj (R) Green, CW05 (R) Thomas and Col (R) Marletto.

To find out more about the US FA Hall of Fame or to make a nomination for 2025 please visit <https://www.fieldartillery.org/us-fa-hall-of-fame-nomination-information>

Photos by Stellavisum

FIELD ARTILLERY

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.

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.

INSTITUTIONAL DOMAIN: The U.S. Army Field Artillery School (USA-FAS) will modernize along with the rest of the Field Artillery Branch. We

ERY STRATEGY for 2030

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 institution-

al 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 Solider 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 Formations and 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.

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 over-

arching 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.

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.



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WHAT TO SUBMIT:

Article submissions do not have to agree with current doctrine, official policy or approved techniques or procedures. Ask yourself how the topic is going to help the artillery community. Only unclassified information can be published in the FAJ. Articles must promote safe techniques and procedures.

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All submissions must be emailed to Director@fieldartillery.org with the subject line FAJ Article Submission. Please email submission in an attached word doc format. DO NOT place images or graphics in to the word document, send them as attachments in .jpeg, .png, .pdf, or .eps files. Include footnotes where appropriate, though we may not publish them with the article. Also include a short biography, highlighting the experience that makes you credible as an author on that subject. Include your name, email address, and phone number so that we may contact you with follow-up questions.

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The 21st-century multi-domain environment has brought about a significant shift in deterrence strategies. Unlike the Cold War, during which U.S. and Soviet deterrence strategies rested on nuclear weapons, today Russia and China possess sophisticated warfighting approaches that allow them to fight below the nuclear threshold. In this world, conventional forces are playing a prominent role deterring Chinese and Russian aggression. The fires community possesses the culture and skill sets to help commanders build integrated operational plans that support deterrence strategies.

Multi-domain operations, as outlined in FM 3-0, Operations, describe how Army units, down to the corps and division levels, leverage and support joint force activities with extremely long-range fires, cyber, space, and influence operations. With these capabilities, corps, divisions, and other tactical units do, at times, support theater and global operations and campaigns outside their own area of operations. These new concepts suggest tactical Army formations should play an expanded role convincing adversaries they cannot accomplish their goals by force, creating a much tighter linkage between corps- and division-level operations and effective deterrence than in previous eras. While the defense establishment has a plethora of experts on deterrence strategies, emerging concepts employing multi-domain forces and integrated operational plans in those strategies suggest a critical need for planners who can operationalize those strategies. To do so, planners need to understand the nature of modern deterrence, how to frame planning

efforts that support deterrence, and additional considerations for those plans.

The 21st Century Deterrence Paradigm Shift Relies on Conventional Forces

Deterrence is an ancient strategy that seeks to convince an adversary not to take specific actions. To accomplish this strategy, defenders have two options, which are not mutually exclusive. They can threaten the opponent with unacceptable costs, known as deterrence by punishment. During the Cold War, the U.S. and the Soviet Union both threatened to annihilate each

Soviet conventional win, the robust nuclear arsenal behind them made war unacceptable for Soviet leaders. Interviews of Soviet officials reveal that following a 1972 war game, during which political leaders heard the likely losses from a nuclear war with the U.S., they stopped attending the games. Mikhail Gorbachev would not even review Deep Operations, the General Staff's plans for war in Europe, because of the escalation risk. While some questioned whether the U.S. would employ nuclear weapons to protect Europe, Soviet leaders were not willing to test the hypothesis.

Chinese, Russian, and Western military theorists have argued that changes in the international political order, coupled with globalization and the information revolution, make wars between powerful countries feasible again. The first difference they note is that the political stakes have changed. Russia and

Making Them An Offer They Cannot Refuse : Preparing for the Army's Role in Deterrence

By: Scott Gerber, PhD

other with nuclear weapons if attacked, arguably making the cost of any aggression outweigh the benefits. A defender can also employ deterrence by denial, demonstrating to the adversary that they cannot accomplish their goal. NATO's 2020 Concept for Defense and Deterrence of the Euro-Atlantic region adopted this strategy toward Russia, presumably because NATO leaders concluded threats of punishment would not stop Russian aggression.

In the Cold War, nuclear weapons created a paradigm shift in deterrence, from deterrence by denial to deterrence by punishment. While NATO's conventional forces played an important role denying a quick

China both appear to believe that there are regional issues, such as Ukrainian sovereignty or the defense of Taiwan, for which the U.S. would not employ nuclear weapons. Furthermore, globalization and the information revolution yielded capabilities that led many to believe quick, decisive wars—such as the U.S.'s rapid defeat of the Iraqi Army in 2003—are possible again. The ability to see and communicate across the globe created revolutionary changes in warfare by enabling communications, real-time awareness, and massed precision strikes nearly anywhere in the world. The globalization and information era also elevated nonmilitary forms of conflict, such as cyberattacks on critical infrastructure or intense

large-scale malign influence campaigns. While nonmilitary attacks are not new, they are now far more effective at disrupting or confusing an opponent on a scale without precedent in warfare. Some argued that precision strike and non-military forms of warfare promised to rapidly disrupt and overwhelm a defender while nuclear weapons deterred outside intervention.

The Joint Force and Army have responded with two concepts designed to address these emerging challenges: the Joint Warfighting Concept and Multi-Domain Operations. These approaches to warfighting have shifted the paradigm back to conventional deterrence by denial. The JWC envisions pulsed operations that employ assets across the theater or globe to generate or exploit opportunities against an adversary, as the fundamental tool for future fights. In that vision, Army multi-domain operations play a key role in Joint Force efforts to defeat key elements of adversary plans, such as initial invasion forces or precision long-range strikes. The Army's Multi-Domain Operations describes employing precision strikes, air defense, and long-range fires to enable actions like pulsed operations. Both concepts envision employing information, cyber, and other non-traditional tools extensively. They inform planning that seeks to win without the explicit threat of nuclear escalation that NATO relied on during the Cold War. For instance, NATO's stated strategy for Eastern Europe depends on conventional forces showing they can get to the fight in time and with sufficient combat power to defeat a Russian incursion.

Four Keys Questions when Making an Offer They Cannot Refuse

Deterrence operates very simply: It threatens opponents. The defender identifies something to protect, such as West Germany during the Cold War. If the defender identifies a challenger they believe will attack it, they extend a deterrent threat. In deterrence by punishment, the

threat is disproportionate harm: Attack West Germany and we will employ nuclear weapons. In deterrence by denial, the threat is defeating adversary plans: If North Korea invades South Korea, the Combined Forces will stop its invasion. Despite the simplicity of the concept, practitioners and scholars have debated the underlying principles and practices exhaustively. Those debates highlight four questions that will help practitioners frame their plans.

What is the time frame of the operation?

Deterrence operates in two time frames: general deterrence and crisis deterrence. General deterrence is analogous to deterrence efforts during peacetime or competition. It seeks to prevent opponents from threatening the defender or conducting provocative actions. NATO's Cold War effort to deter a Soviet attack is a classic example of general deterrence. When a crisis occurs through accident or deliberate action, crisis deterrence seeks to prevent the challenger from escalating the situation further. President John F. Kennedy's threat to stop Soviet ships from bringing missile components to Cuba in 1962 is an example of crisis deterrence. Crisis deterrence is an element of escalation management, and military operations often play a crucial role. Army planners will likely have to support both general and crisis deterrence.

What is the overall deterrence strategy and how does the operational plan contribute to it?

No consensus exists on the best strategies for deterring a potential adversary. Some argue that demonstrating superior power or greater interests determines deterrence outcomes. They argue that Russia's attacks on Ukraine are an example of a state with far greater perceived interest challenging Western efforts to deter aggression in Europe. Alternatively, one could argue that the PRC has not invaded

Taiwan because it lacks the power to do so now at an acceptable cost. More nuanced arguments focus on bargaining and brinkmanship between the defender and challenger or the defender's reputation for making good on their threats.

While dissecting all of the theories requires a library, not a paragraph, two key ideas stand out immediately. First, credible capabilities and plans are necessary for all theories of deterrence. Plans supporting deterrence by denial must contain discernable attributes that convince an adversary they will not succeed. Second, operational planners need to understand policymakers' strategy so they can align military plans with political guidance. Military operations in a strategy relying on power likely employ straightforward demonstrations and threats, while operations supporting bargaining or brinkmanship may rely on subtler or indirect operations.

What motivates the adversary?

Many different approaches to deterrence agree that the motivation of the challenger is fundamental, and deterring a highly motivated challenger is extremely hard. Furthermore, motivation can change rapidly. While the PRC is undoubtedly motivated to reunify Taiwan, the Chinese Communist Party runs a great risk doing so by war because failure could lead to the Party's demise. However, their motivation would likely change by orders of magnitude if Taiwan declared independence because of the potential threat to the Party's survival. In the first case, the Joint Force demonstrating that they can probably engage in a conflict over Taiwan and inflict serious harm on PRC forces likely exerts considerable deterrent pressure. The war is just too risky. However, in the second case, no amount of conventional capability may be to deter a PRC military intervention because of a perceived existential threat.

What biases are influencing adversary decision-makers?

One critical deterrence debate is how human biases can affect outcomes. Most deterrence theories assume people are rational, but research shows that human behavior often deviates from rationality. Intense emotions, domestic political concerns, and identity can, at times, influence people to behave contrary to the expectations of rational decision-making models. So human biases create a serious balancing problem for planners. Deterrence operations and strategies that present opponents with completely unacceptable outcomes can trigger biases that may lead to conflict. However, plans must also be clear enough to cut through an opponent's existing biases. Combatant Commands and national authorities will be primarily responsible for these assessments, but Army planners need to understand the issue and implications for their operations.

Perfecting the Offer at the Operational and Tactical Level of War

Once framed, developing and executing an operational plan with a role in a deterrence strategy follows well-known planning processes with some additional considerations. The first step is mission analysis—understanding the task and purpose. In operations supporting deterrence strategies, the mission can be very traditional, such as demonstrating the ability to destroy a particular adversary capability. However, it may be much more abstract and nuanced, such as influencing a specific leader's perceptions about the conflict and utility of force.

Once planners understand what they must do and why, developing a solution likely requires detailed target systems analysis, including assessments of opposing leaders' calculus about whether their plans can succeed. Part of that analysis has to include assessing which targets may provoke undesired reactions from the adversary. For example, targeting elements of nuclear command and control that

are also supporting conventional operations might lead adversaries to conclude the U.S. is preparing to conduct a nuclear first strike. The targeted state may elect to escalate to nuclear weapons sooner if they are not confident they will be able to do so later.

As planning moves to course of action development, the principal task is synchronizing the necessary elements to deliver the desired effect. However, there are additional considerations. First, how does the adversary receive the information? Deterring someone requires conveying tailored information to them. Demonstrations, media reporting, and military or diplomatic communications are all options. Planners must consider the information pathway because all options can distort the information during transmission. Furthermore, research notes that nuance does not travel well across cultures, suggesting that clear, direct paths are preferable. However, overly public communication can also be unintentionally escalatory. For example, in the lead-up to World War II, Japanese officials concluded the U.S. public messaging was offensive and demonstrated no desire on the part of the U.S. for compromise.

The other critical task during planning is broadening the risk assessment. One question to examine is the likelihood and consequences of escalation. What is the chance the adversary will respond with more aggressive behavior? How likely is an option to trigger an extremely aggressive response, like preemption? During the Cuban Missile Crisis, the U.S. Navy employed training depth charges, an explosive device, to drive Russian submarines to the surface. In one case, a Russian captain directed his crew to attack U.S. ships with a nuclear torpedo until another officer convinced him to rescind the order. Another significant risk is that adversaries or third parties employ influence operations to undermine deterrence activities or paint them as highly aggressive. Russia consistently messages that U.S. activities in Eastern Europe

are aggressive and escalatory and Russian leaders likely believe those claims.

Finally, planning and executing deterrence requires a tailored assessment plan. How will the commander know if the plan is working? What sorts of collection will the unit require to gather the necessary data? Answering these questions will likely require national- or theater-level intelligence assets and expertise. The unit likely will not receive conclusive data, and in general deterrence scenarios, feedback could take months or years.

Building the Next Generation of Deterrence Planners

The importance and nuance of conventional deterrence in the 21st century suggests that the Army will need a community of experts to help commanders plan and execute operations that support deterrence. The fires community's historical focus on integrating lethal and non-lethal fires across time, space, and domains suggests they are uniquely postured to lead that community. However, building these experts takes years and decades, suggesting a significant role for education in producing these leaders.

Two areas of formal professional development stand out: (1) deterrence theory and (2) history and adversaries. Commanders need planners who understand both the theories of how to deter an opponent, the historical record, and the pitfalls of operationalizing deterrence. Deterrence experts can advise commanders on the best approaches and help connect with policy makers and other experts involved in developing deterrence strategies. Furthermore, as this article argued, effective deterrence strategies must account for adversary viewpoints, interests, and capabilities. Russia, China, and other opponents are also not static. Moreover, they write, often in English, so planners should keep their reading list loaded up. Planners can

develop that understanding only through a career-long study one or both of America's principal opponents.

The final area where professional military education can help build deterrence planners is structuring learning to connect them across the government and academia. The diverse factors and demands of modern deterrence planning suggest that the planner's primary weapon system is his or her Rolodex. Understanding the organizations that can help inform planning, including the CCMD Joint Intelligence Operations Center and threat experts, such as the Russia Strategic Initiative in EUCOM, the China Strategic Focus Group in INDOPACOM, or STRATCOM's Joint Analysis Warfighting Center. Deterrence planners also benefit from connections across the interagency, with a particular focus on the Intelligence Community and the State Department. All will have representation at the CCMD, but a broader network of action officers provides greater access to granular analysis and insights that help calibrate plans. Well-crafted education programs can help make these connections.

During the 21st century, conventional headquarters appear to play an increasing role in operationalizing and implementing deterrence strategies and operations. Commanders are likely to call on fires community members to lead these efforts early in their careers. With some new or expanded skill sets, the community can excel at helping commanders make offers U.S. adversaries cannot refuse

Colonel (Retired) Scott Gerber is a Research Staff Member at the Institute for Defense Analyses and also serves as an adjunct associate professor at Georgetown's Walsh School of Foreign Service Security Studies Program. He earned a PhD from Johns Hopkins Homewood Campus through the Army's Advanced Strategic Plans and Policy Program (ASP3). Scott served in a variety of operational roles, including helping EUCOM operationalize deterrence and escalation management after Russia's 2014 invasion of Ukraine.



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DIVISION FIRES: THE ALIGNMENT OF EAB CANNON BATTALIONS UNDER DIVARTY

By: CPT Benjamin Harrell

Currently, over a dozen Echelon Above Brigade (EAB) Cannon Battalions exist in the Army National Guard (ARNG), commonly assigned under Field Artillery Brigades (FAB) and Maneuver Enhancement Brigades (MEB). They are a unique Artillery formation that exists in both towed and self-propelled 155mm configurations with a significantly lighter footprint than its Brigade Combat Team (BCT) sibling. These battalions are also a projected benefactor of the Extended Range Cannon Artillery, with 2-222nd FA, Utah ARNG and 2-142nd FA, Arkansas ARNG already identified as the first two recipients. They are designed to be allocated to a Field Artillery Brigade (FAB) or Division Artillery (DIVARTY) due to their lack of organic Radar and Observer assets.

Due to this limitation, they typically are not deployed independently, but have been used to fill out and augment other field artillery battalions ahead of deployments. Within the Field Artillery Brigade, these battalions are fielded alongside MLRS and HIMARS battalions, which achieve more than double the range of their cannon counterparts. Typically, the EAB cannon battalions take a back seat to rockets in training scenarios, because they do not meet the needs of the FAB, and in turn the Corps in Large Scale Ground Combat. Historically, the Army has neglected and mismanaged these battalions by placing them in formations that either have no use for them or cannot effectively employ them.

By permanently aligning these formations under the DIVARTY, they can be employed in the deep area,

which is doctrinally meant to be beyond the BCT's boundaries, as well as be used to reinforce the BCT in the Division decisive operation or be a dedicated counterfire shooter for the DIVARTY Target Processing Section (TPS). This relationship better matches their range and configuration, given that they would likely be allocated to the Division from Corps in a GS role regardless. The key benefit in doing so is giving the DIVARTY Commander greater flexibility with a fourth, dedicated firing battalion that can meet the basic needs of the DIVARTY, especially when no HIMARS/MLRS assets are allocated from the Corps to the Division.

SUPPORT TO DIVARTY FUNCTIONS

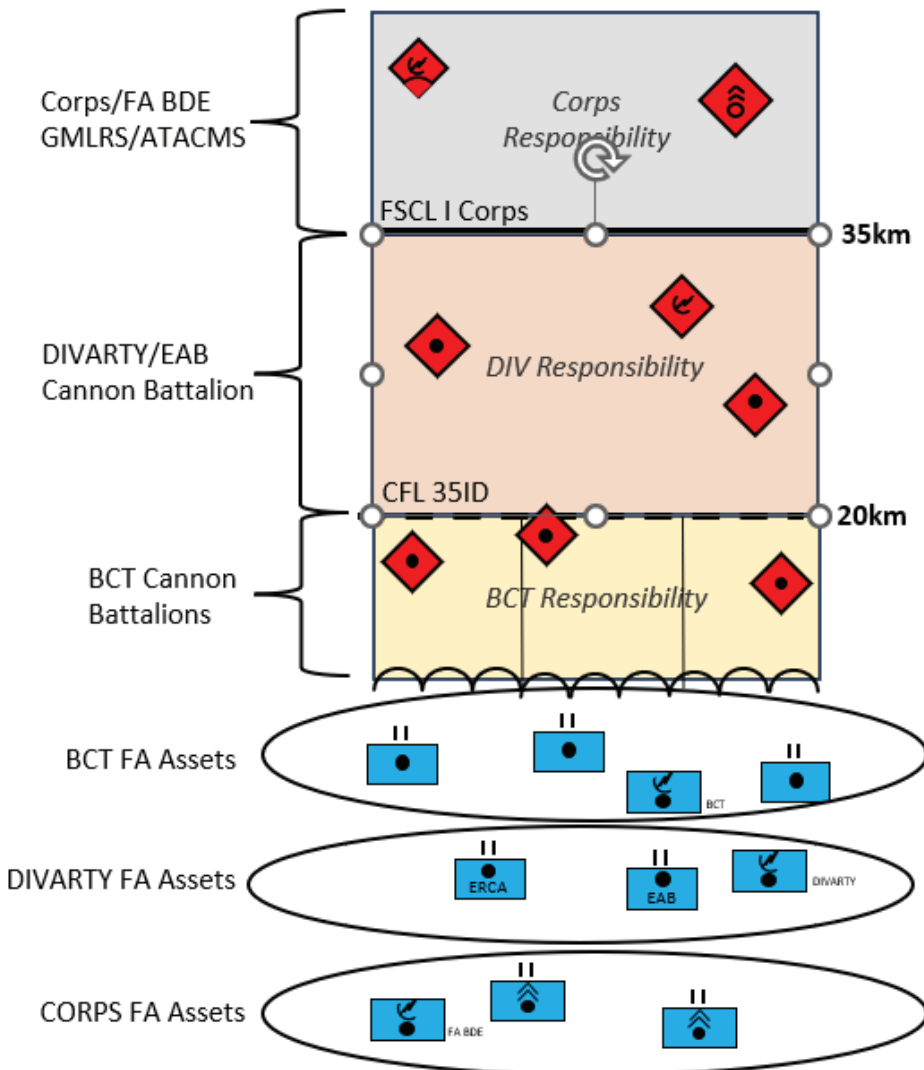
The first function of the DIVARTY outlined in ATP 3-09.90 is the delivery of fires. By adding an additional battalion of cannons under direct control of the DIVARTY, the division tube strength is increased from 54 to 72 and enables the DIVARTY to deliver fires into the deep area without further encumbering the three downtrace battalions already committed to supporting each BCT. These three additional firing Batteries can be allocated in several combinations to support the Division's tasks, including weighting the Division main effort through reinforcing a BCT Cannon Battalion, suppressing enemy air defenses (SEAD) in support of the Division's air assets, and allocation of a Battery to the DIVARTY counterfire cell.

Having an additional Battery allocated in a reinforcing relationship creates greater freedom of maneu-

ver for a BCT Commander, particularly in high-risk tasks such as a wet gap crossing or a breach. The DIVARTY can re-allocate firing units from other Battalions to support such an operation, however it is at the detriment of those BCTs and their shaping operations. Instead, having the fourth (and potentially fifth, as required) reinforcing Battery in position and firing in support of the BCT enables more rapid displacement of the organic Battalion to cross the objective and get set for follow on operations without disrupting fire support for the maneuver elements.

Through coordination with the Division Joint Air-Ground Integration Center (JAGIC), the EAB cannon battalion enables SEAD to be conducted with much closer control and responsive fires, shaping the deep area without impacting the resources of the BCT Commander in the close area. Maintaining this tighter segregation on zones of responsibilities allows the BCT cannons to be controlled at the lowest level possible and enabling the DIVARTY to support a Division SEAD while reducing the unneeded impact on the subordinate units.

Counterfire can be expedited greatly by allocating a battery to the DIVARTY counterfire cell, particularly if the responsibility for reactive counterfire is left solely to the DIVARTY TPS, which is empowered to send targets directly to the platoons while the Battalion maintains control of their positioning, ammunition, and movement. Allocating those firing units precision and rocket assisted munitions further enables rapid and responsive counterfire into the deep area. Setting



aside firing units for rapid execution of counterfire allows the DIVARTY to shape future operations by attriting enemy indirect fire systems in the deep area. In the proposed Multi-Domain Operations Ready Division structure, the Penetration and Heavy Division templates already have EAB Cannon Battalions aligned under the DIVARTY, in addition to each of the Battalions allocated to the subordinate BCTs. This could easily be expanded to the light and joint forcible entry templates using 155mm towed Battalions given the number of under-utilized Battalions found in the Guard.

LIMITATIONS

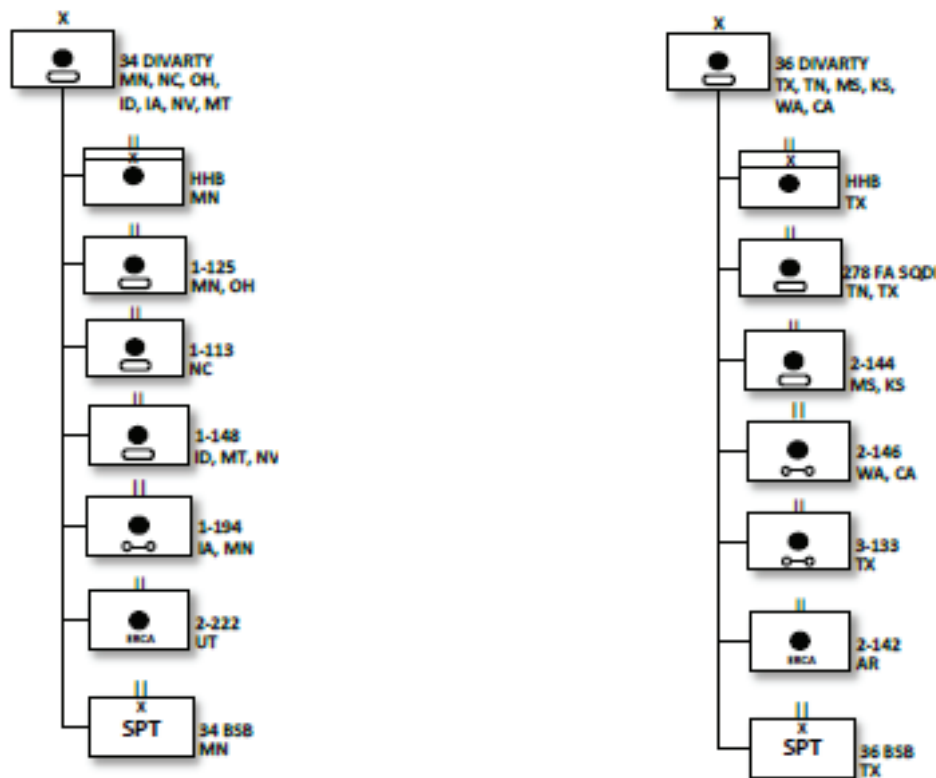
In its current configuration, the EAB Cannon Battalion has several shortcomings that hinder its role in the deep fight, whether under a DIVARTY or FAB. The most glaring of these is the limited range fan. It stands to reason that an EAB Battalion with identical range to its BCT counterparts will not be effective in engagements in the deep area. In the short term, this creates a heavy dependence on rocket-assisted projectiles, while in the long term, fielding Extended Range Cannon Artillery (ERCA), or other extended range systems such as BAE's M109-52 SPH resolves this shortfall. Similarly, in M777A2 equipped Battal-

ions, a long-term solution will need to be met as the Army continues to explore wheeled options for the light and Stryker formations.

Currently, the EAB formation only exists in the Army National Guard, and as a result are not available on the same training cycle as the Regular Army (RA) DIVARTYs. This means that in the short term, the live and collective training opportunities for an RA-to-ARNG pairing would be limited to the annual training period of the EAB Battalion. Though Combat Training Center rotations and larger exercises can be coordinated with enough deliberate planning and coordination. A similar issue can arise for ARNG-to-ARNG pairings if they are not in the same state, but again can be remedied with deliberate planning and coordination at the state level. Further, simply aligning an additional Battalion under the DIVARTY will not always be sufficient to meet the Division's needs. The need to mass more fires will still necessitate the DIVARTY adding missions to the BCT Battalions' queues. The addition of the fourth Battalion should be seen as an enabler, and an addition resource rather than a solution.

In virtually all cases, HIMARS/MLRS exceedingly outperforms the capabilities of cannons and is the preferable option for the deep fight. However, there is no guarantee that the Division will be assigned rocket artillery from Corps. As a result, having the EAB Cannon Battalion serves as a default to meet the requirements without HIMARS/MLRS, and allows for better prioritization of those rocket assets when they are made available to the Division.

Finally, deliberate coordination and allocation of ammunition is critical to supporting the EAB Battalion without taking away from the requirements of the existing Battalions. Careful considerations of the missions of each BCT, as well as the DIVARTY will dictate to whom special munitions are allocated, while range fans should dictate the con-



Projected structures for the 34th DIVARTY (Penetration) and 36th DIVARTY (Heavy)

centration of rocket-assisted and guided munitions between the battalions.

CONCLUSION

Aligning EAB Cannon Battalions under DIVARTYs represents a move to better equip the Division for MDO while making the best use of existing force structure. By integrating these formations directly into DIVARTY, their operational capabilities are maximized while streamlining command and control and reducing strain on the existing firing units within the Division. This realignment addresses longstanding challenges in properly utilizing EAB Cannon Battalions. Historically, they have been underutilized or

misallocated within existing force structures, limiting their impact. Placing these artillery assets under DIVARTY command ensures they are aligned in a manner that fully leverages their capabilities as the DIVARTYs continue to come online. The key advantage of this realignment is the increased flexibility it offers DIVARTY commanders. With these cannon battalions under their direct control, commanders can deploy them to support various divisional tasks, from weighting the Division’s decisive operation to providing dedicated counterfire capability. Moreover, aligning EAB Cannon Battalions under DIVARTY has broader implications for the division’s readiness for large scale combat operations. As emerging

cannon technologies are adopted and fielded, the utility of the EAB Cannon Battalion will only grow and further allow the Division to create overmatch in the deep area.

CPT Benjamin Harrell is currently the AGR Training Officer of the 1-161st Field Artillery, 130th Field Artillery Brigade. He has served as Battalion FDO and AS3, and previously Platoon Leader and FDO in a Paladin Battery, as well as FA Brigade staff. Prior to commissioning, he served as a Fire Direction Section Chief in the 2-130th Field Artillery (HIMARS), including a deployment to Syria in support of Operation Inherent Resolve in 2017-18.

TACTICAL DISTRIBUTED TARGETING: Insights from 2nd Cavalry Regiment

By: LTC Jason Turner, CW3 Cole Brown, & 1LT Edward Weiner

Introduction

In March 2021, the Chief of Staff directed the Army to transform into a multi-domain force. A key characteristic of the transformed force is an ability to “persist inside adversary Anti-Access, Area Denial (A2/AD) networks” by leveraging “mobility, cover, concealment, and deception” to achieve mission success. Key to such success is the efficient and effective execution of the Targeting Process. Traditionally, at the tactical level of warfare, the targeting process was executed via in-person meetings; however, the current and future battlefield demands a shift towards distributed and decentralized targeting structures to enhance adaptability and responsiveness and enable the Army to conduct targeting persistently and effectively while within enemy A2/AD networks (Barno & Bensahel, 2020). This article explores how the 2nd Cavalry Regiment (2CR) addressed the challenges of decentralized targeting while maintaining the commander’s decision-making authority. While navigating this shift in operational tactics, 2CR

recognized the importance of cultivating shared understanding across distributed teams to ensure cohesive and effective targeting efforts. Additionally, the article outlines strategies 2CR employed to ensure the effectiveness of this approach. The Need for Distributed Targeting The complexity of the modern battlefield calls for innovative solutions to address current and future challenges. The vulnerability of centralized command posts highlights the importance of strategies focused on dispersion, mobility, and survivability (Pinter, 2007). 2CR’s mission, which requires rapidly building combat power within 96 hours at the tactical edge of the battlefield alongside NATO Allies and Partners, mandates rapid, precise engagements at extended ranges through the synchronization of all NATO Field Artillery units. Historically, the synchronization of artillery and intelligence, a crucial facet of 2CR’s mission, occurred face-to-face through Targeting Working Groups (TWGs) and Target Coordination Boards (TCBs) conducted at centralized command posts. However,

the increased vulnerability of key leaders at these centralized meetings, as vividly demonstrated in the Russia-Ukraine War, demands that leaders, and thus the targeting process, be dispersed, mobile and survivable (Smith, 2022). Failure to do so will come at an extraordinary cost of leaders and operational effectiveness.

A New Command and Control (C2) Structure at SABER JUNCTION 23

To reduce the vulnerability of leaders and enable survivable targeting, 2CR implemented and refined a new C2 structure utilizing off-the-shelf technologies and repurposed, organic capabilities to reduce the size and signatures of command posts at all levels. The Regimental command posts are organized into three elements—the Regimental Main Command Post (RMCP), Regimental Enabling Command Post (RECP), and Regimental Tactical Command Post (RTAC). The RMCP is the traditional, vulnerable brigade command post from which the Regiment can operate in permissive environments. However, for high-threat environments, the Regiment transitions from the RMCP to the RECP and RTAC. The RECP is designed to oversee ongoing operations, conduct thorough analyses, and formulate plans for future operations from a greater, survivable distance from the front lines while remaining highly connected via remote, transport-agnostic communication systems. Conversely, the RTAC is a highly mobile, low signature command post consisting of five specially outfitted Strykers and a small number of support vehicles designed to enable the Regiment’s senior leaders to C2 the fight, utilizing the same systems as the RECP, while near the forward line of contact.

The Regiment exercised and refined the RECP/RTAC structure during the Regiment’s multinational CTC rotation—SABER JUNCTION 23—in September of 2023. During the rotation, the Regiment successfully transitioned from the RMCP to the RECP and RTAC, moving 70% of



RMCP

Version 1

Traditional RMCP (Fully manned)



RECP

Version 2



RTAC

- RECP (70%) 157**
 - Legal
 - Fires (TARGO +48/+72/FAIO/AFSO)
 - Sustainment (R4/R1/UMT/92RI LNO)
 - Intel (RS2/Fusion, PED, FUOPs)
 - C2 (RS6/CNR/NETOPS)
 - Protection
- RTAC(+) (30%) 66**
 - CMD Group x4
 - Staff x25
 - RTAC Security x21
 - RHHT CP x11
 - C/RES x5

the RMCP's personnel to the permissive environment of the RECP, over 100km from the forward line of contact. Simultaneously, the RTAC operated much nearer the front lines, allowing the RCO, FSCoord, and other key leaders to be physically present and survivable while maintaining essential C2 functionality.

The Regiment executed the new RECP/RTAC structure with great success, receiving commendation from the Army Chief of Staff Gen. Randy A. George for its innovative C2 structure (Lacdan, 2023).

Targeting from the RECP/RTAC

The separation of the RTAC and RECP prevented the collection of key

leaders for the traditional, in-person targeting meetings. 2CR's targeting enterprise overcame this challenge by utilizing the Tactical Mission Data Platform (TMDP), an integrated targeting and common operating picture (COP) platform, and the Instant Connect Enterprise (ICE), a secure voice-over-IP (VOIP) application, to enable dispersed targeting and conduct key collaborative battle rhythm events like the TWG and TCB. The ability to pass information, collaborate, and assemble decision-makers remotely allowed key leaders to remain physically dispersed, decreasing their physical and electromagnetic footprints, thus challenging the targeting process of the enemy. The increased resiliency of targeting and C2 functions while operating inside the en-

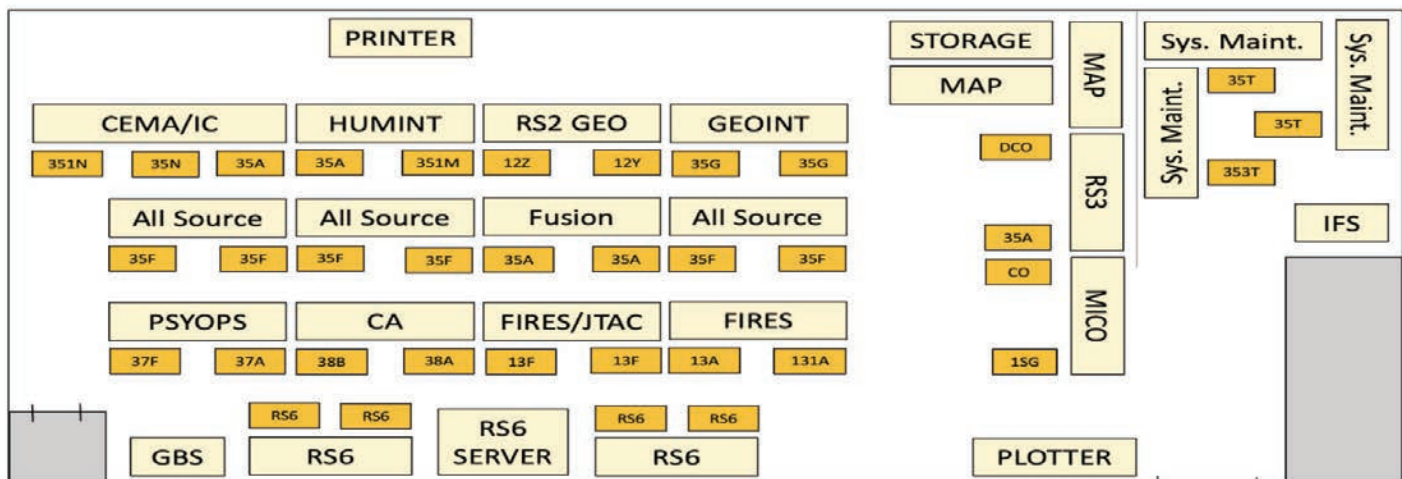
emy's threat envelope allowed the Regiment to sustain the fight, expand the battlefield, and strike the enemy through all domains while maintaining the paramount structure of tactical Targeting Working Groups and Coordination Boards.

Maintaining Targeting Efficiency in a Dispersed Environment

To ensure the effectiveness of targeting meetings despite physical separation, 2CR implemented several key actions:

- **Targeting Leader Professional Development (LPD):** A targeting LPD was conducted for the staff prior to the exercise. This LPD covered the fundamentals of targeting, including the conduct of TWGs and TCBs. Additionally,

RECP-Saber Junction 23



the LPD focused on the inputs and outputs of these working groups and how they are used to synchronize efforts across the Regiment.

- **Communication Strategies:** The guidance given to TWG teams highlighted the importance of clear communication in a dispersed environment to maintain high-quality discussions and outputs. This was achieved by training on TMDP in conjunction with ICE VOIP software for voice communications. Additionally, 2CR employed secure but unclassified (SBU) systems for targeting in addition to traditional Secret-level systems.

TMDP and ICE: Enabling Distributed Targeting

Tactical Mission Data Platform (TMDP): TMDP is a data integration platform designed to ingest data in a common format with “smart objects” that can link across TMDP tools, seamlessly integrating data across COP, targeting, and other functions. The platform’s COP tool integrates Position Location Information (PLI) compiled from various sources onto the map. In 2CR’s case, these sources included the Regimental Android Tactical Awareness Kit (ATAK) server, Mission Partner Kits (MPKs—essentially a reduced ATAK kit), and the Joint Battle Command – Platform (JBC-P) network.

Additionally, TMDP can deploy,

manage, and field the full suite of mission software and data that is required for a survivable, dispersed command post wherever the fight is happening, from garrison to the field, while in flight or on the ground, on classified networks or on an unclassified network with coalition partners. TMDP contains proprietary mission warfighting applications and integrates with applications from other third-party vendors, providing intelligence and fires synchronization. By leveraging a common data layer and advanced analytics, TMDP integrates warfighting functions for battlefield operations while supporting survivable, distributed, and interoperable command posts at the tactical level. TMDP is deployed across unclassified, coalition, and classified networks, creating a shared understanding for all elements.

Dynamic updates to the COP ensured leaders stayed informed about evolving situations and users could tailor information displays to their specific needs. Communication tools, which include an auto-translation feature for multinational units, ensured seamless information sharing. TMDP’s ability to combine diverse data into a unified picture enhanced overall situational awareness and significantly contributed to mission success by improving understanding, coordination, and decision-making. TMDP facilitated the sharing of products and data between members of the

distributed targeting team.

Instant Connect Enterprise (ICE):

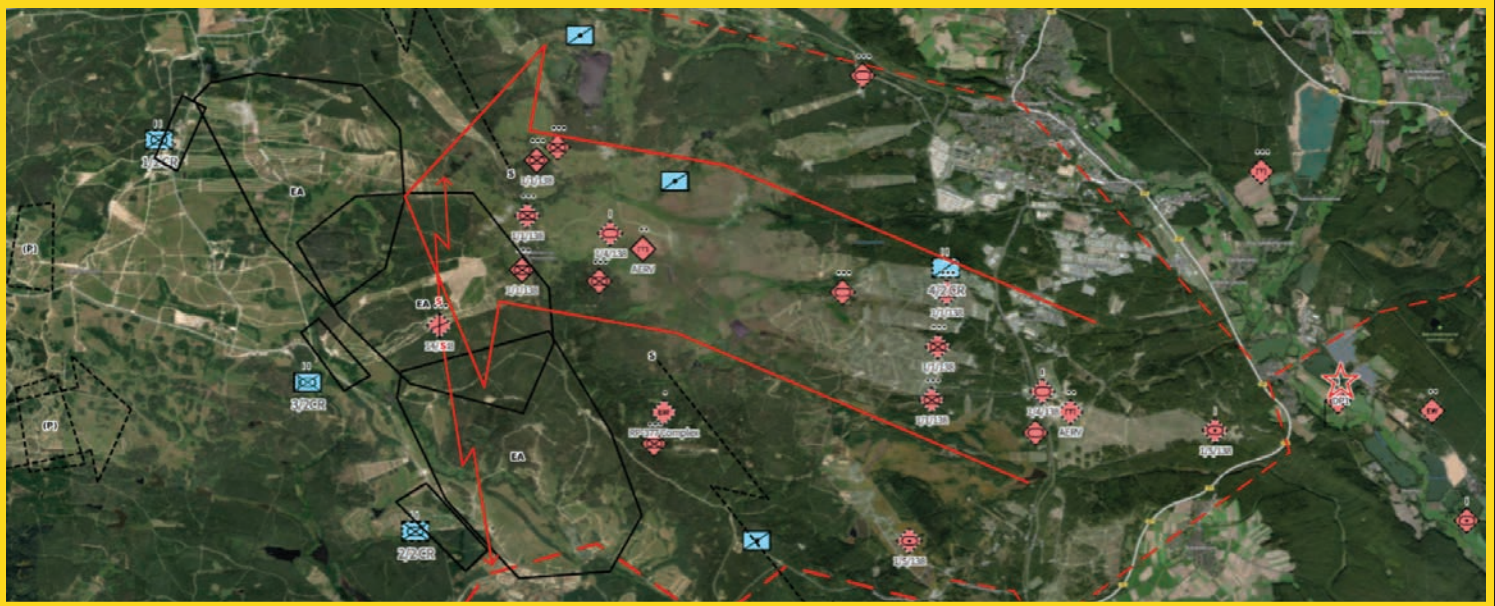
The ICE software application is a SBU VOIP tool that supports voice and chat links for direct calls and group meetings. 2CR’s targeting teams effectively used ICE alongside TMDP to conduct dispersed TWGs and TCBs. During these working groups and boards, TMDP was employed to share the COP and target products simultaneously and in real time, while ICE provided voice communication between members which enabled effective distributed targeting. The chat feature included in the ICE application further increased communication resilience as it allowed for continued communication even in the event of audio issues. The distributed targeting team achieved efficiency, resilience, and a low electromagnetic signature by leveraging ICE and TMDP via Starlink and other low-signature internet connections.

Targeting Meetings with TMDP

Target Workbench:

TMDP’s Target Workbench efficiently helps organize and process target sets by graphically depicting the target information and linking to the COP tool’s map for spatial depiction. 2CR gained significant experience utilizing the Target Workbench to facilitate the Decide, Detect, Deliver, Assess (D3A) targeting process during the Field Artillery Squadron’s Table XVIII.





The enemy's +96-hour order of battle was input into the 2CR Target Workbench by the S2 during the initial Decision step of the process four days in advance of the Air Tasking Order (ATO). This +96-hour order of battle provided potential targets for the following day's TWG. At the subsequent TWG, a +72-hour High-Value Target List and a list of proposed targets were generated, based on analysis of the upcoming enemy order of battle.

These proposed targets were entered the respective "+72-hour Proposed" column in the Target Workbench, efficiently organizing and displaying them. Additionally, the linkage of the Target Workbench with the COP map allowed the linked targets to be spatially depicted on the COP. The proposed target set was

then provided to the TCB and once approved, transferred to the "+72-hour Approved" column of the Target Workbench. These targets were transferred daily to their respective ATO columns for validation, review, execution, and assessment during subsequent TWGs. The Target Workbench effectively assisted the Targeting Officer with the administration, briefing, and execution of targets throughout the D3A process.

GAIA Map:

The COP tool within TMDP is called the GAIA map. This map is linked to all the other tools on the TMDP platform, enabling smart objects to be easily displayed spatially across the battlespace.

Additionally, the GAIA map introduces a collaborative dimension for

distributed users through a feature called "Follow." This functionality encourages shared understanding as it allows outstations to effortlessly view the screen of the briefer remotely. The "Follow" button empowers outstations to synchronize with the briefer's map transitions with a simple click. The utility of the feature was demonstrated during the FAS Table XVIII's when the Fire Support Coordinator (FSCOORD) attended and disseminated guidance during the TWG and TCB with an outstanding situational awareness of the COP and the inputs from all briefers, all while participating in a six-hour tactical road march.

Dragon Special Feature:

The utilization of the "Slide" feature of TMDP enhanced efficiency in targeting even more. This func-

Dragon Special ATO AH 10 FEB																
2CR HPTL		DECIDE					DETECT				DELIVER			ASSESS		
CAT	SYSTEMS	PRI	CAT	HPT	TGT #	LOCATION / NAI	TAI	ASSET	DETECTION WINDOW		ASSET	WHEN (I/A/P)	TRIGGER	EFFECT	UNIT	ASSET
1	ADA	1	MNVR	6x T-72s	H19D	NAI 019	TAI 019	R-4200 A: DFM 0401	0400	0700	M777A2	A	A	Nonlethal (SA T-72)	P-42 A: DFM	P-42 A: DFM 0401
2	FA	2	ADA	2x 2S6M	H20D	NAI 001	TAI 001	P-5811 A: DFM 0401	1300	1600	M777A2	A	A	Nonlethal (SA 2S6M)	P-5811 A: DFM 0401	P-5811 A: DFM 0401
3	ENG	3	ADA	2x SA-13	H21D	NAI 001	TAI 001	P-5811 A: DFM 0401	1300	1600	M777A2	A	A	Nonlethal (SA SA-13)	P-5811 A: DFM 0401	P-5811 A: DFM 0401
4		4	FA	3x 2S1	H22D	NAI 022	TAI 022	P-5811 A: DFM 0401	1800	2200	M777A2	A	A	Nonlethal (SA 2S1)	P-5811 A: DFM 0401	P-5811 A: DFM 0401
5		5	FA	3x SNAK 10	H23D	NAI 022	TAI 022	P-5811 A: DFM 0401	1800	2200	M777A2	A	A	Nonlethal (SA SNAK 10)	P-5811 A: DFM 0401	P-5811 A: DFM 0401

Time	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	
DETECT																									
DELIVER																									

tionality allowed outstations to actively follow the progress of the RECP team as they filled out the 2CR Target Synchronization Matrix (TSM), known as the Dragoon Special.

This capability proved immensely valuable, particularly in maintaining alignment with the FSCoord's intent during critical periods, such as the TRM. The "Slide" feature aided real-time collaboration and ensured that all relevant stakeholders remained synchronized and informed throughout the targeting process, even in dynamic and time-sensitive situations.

Additional Capabilities:

Searchable—Every object, document, and tool within TMDP is searchable, allowing users to quickly retrieve information during targeting meetings by keyword search.

Live Layers—COP layers in TMDP can be set to update in real time from authoritative sources, saving hours of information transfer and verification in preparation for targeting meetings.

Lessons Learned

2CR's experience implementing decentralized targeting during Saber Junction 23 generated valuable insights which can benefit future operations.

- **Focus on Resilience:** The nature of decentralized targeting is dispersed. This calls for strong communication networks and infrastructure. Redundancy and alternative communication methods are crucial, as they ensure uninterrupted information flow in the face of potential disruptions or enemy actions which allows the unit to focus on the fight instead of fighting faulty communications.
- **Standardization is Key:** Establishing standardized protocols and procedures for communication and information sharing is key. This ensures a common understanding across all echelons and facilitates seamless

collaboration, even when units operate in geographically isolated locations.

- **Training for Effective Use:** Personnel at all levels require comprehensive training on the new technologies and communication tools used in decentralized targeting. This training should focus on proficiency in utilizing these tools while adhering to established protocols and troubleshooting potential issues.
- **Optimize Communication and Reference Management:** Utilizing solutions like chat rooms allow the rapid distribution of instructions. It also ensures alignment with established procedures such as Current Operations (CUOPs) and Future Operations (FUOPs). Moreover, accessible, up-to-date reference products help to preserve accuracy and consistency across locations. However, version control remains a challenge. This highlights the importance of using tools like OneNote and TMDP for collaborative work and documentation purposes.
- **Knowledge Management is Vital:** Effective knowledge management is a central pillar to successful targeting operations. Successful knowledge management strategies enable dispersed users to access and share information quickly and reliably, optimizing the targeting cycle.

Targeting in the Future

The modern battlefield is constantly changing and evolving. This demands continuous adaptation of tactics and technologies. Decentralized targeting offers a promising approach to enhance responsiveness, agility, and survivability in modern operational environments. 2CR's experience with the RECP construct during Saber Junction 23 serves as a valuable case study which highlights the potential of this approach.

The future of decentralized targeting looks even brighter with the integration of Full Motion Video (FMV) capabilities into the TMDP. It

is expected to be operational during Saber Junction 24. This enhanced functionality will significantly improve situational awareness and collaboration within geographically dispersed teams.

Four essential capabilities for effective distributed targeting include:

1. **Persistent Chat (Wickr):** Secure and reliable persistent chat ensures continuous communication between geographically dispersed units. 2CR has recently begun employing Wickr, the secure VOIP and chat app from Amazon Web Services, as a solution.
2. **Persistent Voice (ICE):** Real-time persistent voice communication, as provided by tools like ICE and Wickr, allows quick coordination and decision-making. This is crucial during critical operations.
3. **Unified COP (TMDP):** A shared COP, such as TMDP's GAIA map, helps to develop a common understanding of the battlespace. This common understanding is key across all echelons to enable effective collaboration and synchronization of efforts.
4. **Collaboration Tools (TMDP and Intune):** TMDP's built-in collaboration features empower geographically dispersed teams to work together seamlessly. Additionally, secure, cloud-based collaboration platforms like Microsoft Intune can help share data efficiently and ensure everyone remains informed.

By leveraging these four pillars—persistent chat, persistent voice, a unified COP, and robust collaboration tools—Field Artillery units can embrace the potential of decentralized targeting, ensuring they maintain a decisive advantage on the future battlefield.

The battlefield is a dynamic environment, and targeting methodologies must continuously evolve to stay ahead of potential adversaries. 2CR's experience with the RECP construct during Saber Junction 23 and FAS TBL XVIII's is a valuable springboard for further develop-

ing and refining decentralized targeting tactics. Continued experimentation with new technologies, operational concepts, and training exercises will ensure that decentralized targeting remains a viable and practical approach in the face of ever-changing threats.

Continued experimentation, training, and development are essential to ensure that Field Artillery units stay at the forefront of battlefield targeting innovation. The successful implementation of decentralized targeting by 2CR builds the way for a more agile, responsive, and ultimately more lethal approach to targeting, enabling the Army to further transform into a multi-domain force capable of dominating an advanced enemy in a contested battlespace.

LTC Jason Turner is currently serving as the Field Artillery Squadron Commander in 2CR at Vilseck, Germany. His previous assignments include JMRC OC/T, JSOC Planner, DCO, S3, FSO, Special Operations Terminal Attack Controller, FDO, and PL. LTC Turner is a graduate of the Irish Senior Command and Staff College, Field Artillery Captain's Career Course, and FA Officer Basic Course.

CW3 Cole Brown is currently serving as the senior targeting officer in 2CR at Vilseck, Germany. His previous assignments include 2nd MDTF targeting officer, Field Artillery Intelligence Officer, Battalion Targeting Officer, and Target Acquisition Platoon Leader. He enlisted in January of 2007 as a 13 Bravo and, in 2016, was selected to attend Warrant Officer Candidate School and later attended the Warrant Officer Advanced Course as a 131A Field Artillery Technician.

1LT Edward Weiner currently serves as Assistant Fire Control Officer for Second Cavalry Regiment, with a previous assignment as a fire support officer. Weiner commissioned from Kansas State University in 2021 with a Bachelor of Science in Mechanical Engineering.



Boeing is leading a best-in-class industry team to develop Ramjet 155 in support of the Army's Long Range Precision Fires strategy. The ramjet-powered 155 mm projectile will revolutionize artillery — more than doubling the range of existing U.S. and allied cannons. The strategic partnerships leveraged by Boeing combine world-leading expertise in guided munitions, projectiles, ramjet propulsion technology and sensors to deliver a superior, affordable capability.



Off-post Training Exercises and the Readiness Fight



By: LTC Anthony J. Allen, MAJ Benjamin T. Page, and CPT Dylan S. Karnedy

Whether training Mission Essential Tasks (METs), ensuring medical readiness, or maintaining pacing items, Army units are in a continuous fight to create, organize, inspire and sustain ready formations. Many opportunities exist to increase unit readiness through off-post training exercises which require units to execute expeditionary deployment activities. Commanders must fully understand the costs and risks associated with such training exercises and prepare to adapt training objectives to ensure their unit receives the greatest training value for the time and cost committed. During U.S. Army Europe and Africa (USAREUR-AF) DEFENDER EUROPE 24 Exercise (DE24), it is evident that 1-14 FAR increased the unit's organizational readiness, personnel readiness, and continued innovative learning to maintain materiel readiness.

DEFENDER EUROPE 24, the Off-Post Training Exercise

DEFENDER EUROPE is an annual

multi-national joint exercise designed to build readiness and interoperability between U.S. and NATO Allies and partners. It is a USAREUR-AF led exercise focused on the strategic deployment of continental United States-based forces and the employment of Army Prepositioned Stocks. DE24 consisted of three nested exercises: Saber Strike, Immediate Response, and Swift Response, with 17,000 US and 23,000 multinational servicemembers participating from 20 allied and partnered nations.

Exercise Immediate Response 24 (IR24) was designed as a scenario for 29th Infantry Division to reinforce V Corps' organic units with additional forces from western Europe and the USA. The non-standard task organization consisted of elements dispersed across Poland. The 29th ID Main Command Post and Support Area, 304th SB Main Command Post, 2-123 FA Battalion (M777), and 1-14 FAR(-)(HIMARS) were all located in Ustka, Poland.

Training Objectives

1-14 FAR deployed a BN TAC and its Bravo Battery (BTRY) with a Maintenance Support Team for DE24 - IR24. The higher headquarters objectives impacting 1-14 FAR in IR24 included:

1. The strategic deployment of CONUS-based forces.
2. Reinforcing the theater with rapid re-positioning of a combat credible equipment set forward.
3. The conduct of a Multi-National Live Fire Exercise.
4. Interoperability with allies and partners.

The BN's nested training objectives were:

- (1) Project combat power through deliberate deployment, conduct of reception, staging and onward movement (RSOM).
- (2) Integrate with COMPO 2 partners to provide simulated General Support - Reinforcing fires in sup-

port of wet gap crossing operations. (3) Build human and procedural interoperability with NATO Allies.

The BN's endstate included RSOM completion, execution of a tactical planning exercise with the 6th Airborne Brigade (POL), and execution of a multi-national live fire exercise enabling Artillery Table XII qualifications for both Bravo BTRY firing platoons.

Organizational Readiness

When a unit trains at home station and off-post, the training unit should improve or retain proficiency in its assigned METs. This is accomplished by conducting individual and collective training at echelon to ensure that sub-tasks of these METs are conducted to standard. By conducting correlating training events, a unit's commander assesses the effectiveness of his or her organization at accomplishing an assigned mission. 1-14 FAR has three BN METs:

- MET 1. Control Field Artillery Operations
- MET 2. Conduct Battalion Fire Missions
- MET 3. Conduct Expeditionary Deployment Operations at the Battalion Level

In its support of DE24 - IR24, 1-14 FAR identified the three previously stated battalion training objectives nested with higher headquarters intent that support a training strategy for the battalion to increase MET proficiency.

The BN's Training Objective (1) is closely linked with its MET 3, in which the BN executed Soldier Readiness Program (SRP), conducted pre-deployment operations, prepared equipment for deployment, and deployed equipment and personnel. Furthermore, while the preponderance of the BN's equipment was moved to EUCOM by vessel, one of the HIMARS firing platoons was transported by strategic airlift, which highlighted the accomplishment of rapidly re-positioning combat power forward.

Additionally, it set conditions and refined pre-existing systems to better deploy the formation on future missions.

The BN did not achieve the desired intent and end state for Training Objective (2), which required refinement upon the unit's arrival at Ustka. The plan was to co-locate the BN TAC element with the 29ID Main Command Post to provide suppression of enemy air defense (SEAD) and strike fires with one firing HIMARS BTRY in a General Support-Reinforcing command-support relationship to 29ID. Due to a reduced footprint, the oversaturation of the 29ID digital architecture, and MPE network issues, there was no network availability for the BN Fire Direction Center. The BN refocused on strategic messaging about participation in DE24 with static displays and media engagements. The live fire gained national attention hosting three major news networks and multiple distinguished visitors. While meeting the objective of strategic messaging it also provided multiple opportunities to train Soldiers on media engagement, and messaging. The integration of the 29ID Public Affairs Officer and rehearsals before engagements proved beneficial.

The BN accomplished Training Objective (3) by completing two Artillery Table XII Exercises with the assistance of Polish Joint Fires Observers (JFOs) from the 6th Airborne Brigade (POL). Working with Allied forces provided an opportunity to learn about human and procedural interoperability. This was achieved through the conduct of the fire missions as part of the platoon's live fire using an LNO with the Polish JFOs. This also achieved one of the Polish Brigade's training objectives. Through the execution of AT VII-XII tasks, controlling field artillery operations and conducting fire missions, the BN increased proficiency levels in METs 1 and 2. The platoon qualifications in Ustka cemented launcher section crew drills, re-enforced leader critical thinking while operating in constrained and unfamiliar terrain

and allowed the unit to adapt to persistent electronic jamming from a real-world adversary.

Unit commanders must consider that exercise and training objectives will need to be refined as friction arises in off-post training, especially with multi-national and multi-echelon exercises. This refinement should be thought of as an ongoing process or negotiation, where units can gain experience in unscripted events. A commander's intent for off-post training, which provides an endstate that is not overly specific and is focused on METs allows subordinate leaders to continue training even as their formations work through unanticipated challenges.

Personnel Readiness:

The Army categorizes Personnel Readiness into five dimensions: physical, emotional, social, spiritual, and family. As a unit we address the five dimensions through commonly known programs such as SRP, mandatory AR 350-1 training (i.e. SHARP, EO and MRT), and the involvement of an effective SFRG. A unit must fully complete the SRP for Soldiers to be approved for deployment into an area of operations. For off-post training exercises, the use of DA Form 7425, the familiar Readiness and Deployment Checklist provides an excellent opportunity to increase personnel readiness in the areas of individual requirements, supply, mandatory training, legal, finance, medical, dental and vision as well as exercise installation processes.

Creating and maintaining SRP packets in accordance with DA Form 7425 for each Soldier as they arrive to the unit sets the conditions for success. 1-14 FAR completed all SRP requirements for 82 deploying personnel across two weeks of deliberately staggered BN internal checks followed by a one-day installation SRP. The BN met its readiness objectives and supported the Fort Sill, Oklahoma, Fires Center of Excellence (FCoE) objectives of exercising SRP activities at a consolidated

location processing 100 Soldiers per day within 8 hours of execution.

The execution of DE24 also provided an opportunity to validate SFRG functions. The BN conducted a deployment townhall ensuring that Family members within the SFRG had opportunities to link in with additional installation support within the Army Community Services at Fort Sill. The SFRG proved vital in communication updates and validated call rosters used for families during redeployment, especially as the flight for redeployment was unexpectedly delayed.

Materiel Readiness

When units deploy overseas, they can expect support from a robust and intact logistical and sustainment enterprise ensuring swift and steady access to all classes of supply needed to sustain combat operations. When units conduct off-post training exercises, they must conduct deliberate and thoughtful planning to ensure that their logistical and sustainment requirements are met for the duration of the training exercise. Materiel readiness provides a way to assess if Soldiers have the correctly configured modern and lethal equipment. Materiel readiness for equipment is often expressed by a unit's operational readiness (OR) rate in a percentage of fully mission capable items.



Prior to movement of its equipment, 1-14 FAR conducted deliberate equipment deployment operations. These operations were conducted in conjunction with the 100th SSB and involved the agricultural cleaning of all equipment, maintenance to ensure the equipment was fully operational, weighing, measuring and labeling all equipment to ensure its accountability and readiness at the seaport of embarkation. These are all tasks not typically integrated into on-post training events. Previous off-post experiences and captured maintenance lessons learned identified the vehicle parts most likely to break during movement and training operations. The unit planned for shop stock of those repair parts to be on hand, so vehicles remained fully mission capable (FMC) to meet deployability standards and the future desired training objectives. A heavy maintenance focus prior to deployment on vehicles being thoroughly road and field exercised resulted in a full OR rate of 100%. However, while a unit may do its best to ensure that all its equipment is fully operational when leaving home station, that is no guarantee that a unit's equipment will arrive at the port of debarkation in the same working condition.

1-14 FAR had previously conducted an operational deployment from 2022-2023 in support of Operation European Assure, Deter, and Reinforce (OEADR) in which the BN's vehicles and containers returned to CONUS via an open-air cargo vessel. This mode of transportation, combined with a maritime environment known for corrosive impacts to Army equipment, resulted in an overall reduction in the BN's OR rate to approximately 52%. Detailed planning resulted in USAREUR-AF contracting an enclosed cargo vessel to move

the vast preponderance of equipment supporting DE24 to Europe. This vessel contained 41 vehicles and 12 containers that belonged to 1-14 FAR. When the vessel arrived at the port of Kalundborg, Denmark, the only visible damage to 1-14 FARs equipment was a broken driver side mirror on a HMMWV caused by stevedore mishandling. When all the unit's equipment, including the firing platoon transported by C-17 STRAT AIR arrived at the training areas in Ustka, Poland, a closer technical inspection determined an OR rate of 83%. Several faults were easily repairable without additional repair parts required. The most common HIMARS faults affecting four of eight launchers were hydraulic fluid and air hose leaks. This was one of the pre-identified common faults for which the BN brought forward a hose fabrication kit to fabricate new hydraulic and air-line hoses. The involvement of the FSR and MST in sustainment planning were critical to achieving maintenance success. With the execution of deliberate maintenance operations, the BN achieved an OR rate of 94% prior to the conduct of training. Following RSOM, the next challenge to a unit's materiel readiness is ensuring regular preventative maintenance operations during training.

During the training exercise, 1-14 FAR maintainers primarily used the shop stock from a BOH container to maintain and repair vehicles during the two platoon qualifications. Over the course of the exercise, multiple vehicles experienced faults and maintenance issues. It was important to understand that in an off-post training environment as remote as Ustka, Poland, the only repair parts available to the BN were the shop stock parts brought from home station and those from other like vehicles. Two lessons learned included the need to triage vehicles to create an order of priority for repairs and understanding when to conduct controlled substitutions. Unit commanders should make staff-informed decisions on controlled substitutions based on the conditions required to achieve

mission accomplishment and future operations. Upon completion of the training exercise, BN maintainers achieved a 97% OR rate in anticipation of equipment redeployment operations. The BN retained this OR rate during redeployment port operations towing only one vehicle onto the vessel. This meant that during the training exercise, the battalion increased the OR rate by 3%, while unit maintainers gained valuable experience doing field maintenance and the unit met its training objectives.

Costs to Conduct Off-Post Training

As an off-post training event, DE24 helped build 1-14 FAR's personnel and organizational readiness, tested the unit's materiel readiness, and assisted multiple echelons in accomplishing objectives. There are costs associated with the off-post training though. These costs are best expressed in terms of funding and time. Funding is defined as the monetary cost of accomplishing the training. Time refers to the amount of time required to set conditions for DE24, and time that the unit could spend at home station conducting similar tasks with little operational or strategic effects.

Once a unit commits its equipment for deployment, that equipment is not available to support further training until RSOI/RSOM is completed. Once B/1-14 FAR committed its equipment, it was not available for a total of 80 days for transit. Units can negate the lost time with equipment by cross-loading equipment needed for training between units or by planning training that does not require the deployed equipment such as Engagement Skills Trainers and Tactical Combat Casualty Care (TC3) training.

Due to DE24 being a USAREUR-AF hosted and planned training exercise, USAREUR-AF funded the vast majority of expenses required to conduct training. All land and maritime transportation of equipment and personnel to the EUCOM AOR are USAREUR-AF funded, which cost a total of around \$18 million. 1-14

Approximate Cost in Funds		
	Unit/FORSCOM Funded	USAREUR-AF/EUCOM Funded
Personnel Travel / Lodging	<ul style="list-style-type: none"> Deploy PSA at Charleston - \$24k Redeploy PSA at Beaumont - \$9k 	<ul style="list-style-type: none"> Deploy / Redeploy PSA and ADVON in EUCOM - \$90k
Equipment Movement	N/A	<ul style="list-style-type: none"> Deploy/Redeploy Vessel - \$15.5m Deploy CLH - \$157k Deploy STRAT CLH - \$48k Redeploy CLH - \$55k STRAT C-17 - \$1.16m Deploy Main Body via chartered air - \$800k Redeploy Main Body via chartered air - \$581k
Maintenance / Supply	<ul style="list-style-type: none"> CL V - \$16k; resourced from unit STRAC and prepositioned in EUCOM CL VIII - est. \$3k CL IX - est. \$20k 	<ul style="list-style-type: none"> CL I - USAREUR-AF Contracted CL III - USAREUR-AF Contracted CL V - n/a CL VIII - n/a CL IX - n/a

FAR was required to source its own Class V ammunition from its annual STRAC allocation, provide medical material to facilitate its own Role I coverage, and provide for the cost of its own equipment maintenance. In addition, any personnel travel and lodging expenses in support of deployment or redeployment operations in CONUS were paid for by the BN. Overall, the BN would not have received the same amount of time, money, or resources to conduct a similar training event at home station.

Conclusion

With recent conflicts around the world, and the possibility of future large scale combat operations in any part of the world, the ability for a unit to rapidly conduct an expeditionary deployment and project combat power is critical to quickly impact and shape future fights. DE24 allowed 1-14 FAR to see itself while executing training and building readiness away from the comforts and predictability of home

station. Additionally, it facilitated seeing shortfalls and areas for improvement when integrating with other U.S. formations or Allied forces. Commanders must deliberately select training objectives to build proficiency in their assigned METs and be prepared to adjust them if unanticipated friction is identified. While training and building readiness at home station is effective, an off-post training repetition which requires a unit to execute expeditionary deployment activities can increase readiness. Overall, the BN's ability to build readiness and increase deployability was worth participation in DE24 when compared to spending a similar amount on a home station training exercise.

LTC Anthony J. Allen is the Battalion Commander of 1-14 FAR

MAJ Benjamin T. Page is the Battalion Executive Officer of 1-14 FAR

CPT Dylan S. Karnedy is the Battery Commander of B/1-14 FAR.

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Big Sky, Little Bullet: The Argument for an Automated Artillery Collision Avoidance System

By: Major Andrew M. Krumm

The fire support community has long struggled with the problem of air clearance within an acceptable time parameter. The space community holds the solution to this problem by means of capabilities such as NOAA's, Open-Architecture Data Repository (OADR) for collision avoidance. In our ever-evolving environment, every moment counts and is consequentially an eternity to those we support. As we observe tactics and record observations across the globe, the need for immediate processing of airspace clearance has never been more important. If left unresolved and allowed to remain the status quo, this issue of airspace clearance will effectively write our community out of the history books in favor of more expedient means. The OADR, although not a direct off the shelf solution, provides a model to add collision avoidance as part of computational procedures or even onboard the projectile itself.

The Open-Architecture Data Repository in development is just one example of a growing number of systems designed to prevent space vehicle collisions. Many of these are trending toward automated collision avoidance which remove human decision making in favor of a more informative role. At a relative minimum speed of 17,000 miles per hour, seconds could literally be the delta between collision or avoidance.

An automated fire support specific collision avoidance system, whether in use as part of computational procedures or a system onboard projectile, would fundamentally

change the way we deconflict airspace. Not only for our own community but think of the applications across the greater joint force community. This is where the Big Sky, Little Bullet theory comes into play as our framework for lateral, vertical, and time deconfliction of airspace would inform prudent risk acceptance in real-time. Gone would be the days of thousand-foot planning buffers, shutting down artillery fires for maneuvering aircraft, or the dreaded twenty-minute airspace clearance battle drills. The later, resulting in missing the target altogether. Out with the old and in with the new mindset of automated calculation for probability of error to avoid collision to enable rapid delivery of fire support within the enemy displacement timeline every time. In doing so, we preserve critical munitions by providing first-round-fire for effects on target. The automated collision avoidance system would enable our community to provide rapid effects while mitigating risk to aerial platforms along the gun target line.

The fire support community should develop and integrate an automated collision avoidance system into our fire mission processing software systems as well as explore onboard systems for in flight collision avoidance. The requirement for rapid airspace clearance is well beyond the point of need. Many lessons can be learned from the space community and applied to terrestrial collision avoidance as part of fire mission processing. The first support community should apply these lessons and develop a system that truly enables use of the infamous

“big sky, little bullet” to maximize efficient use of an already limited airspace while producing acceptable risk solutions to deliver effects.

The Open-Architecture Data Repository (OADR), among other emerging automated collision avoidance systems, will resolve long standing challenges with airspace clearance. By incorporating lessons learned from space vehicle collision avoidance, our fire support community can rapidly compute acceptable risk solutions to deliver effects on target within an enemy platform's displacement time. This will drastically increase artillery lethality, while easing logistical demands. In doing so we will build further trust with our ground forces and maintain our namesake as the “King of Battle”.

MAJ Andrew Krumm is a 2009 graduate of the Virginia Military Institute. Past assignments include Platoon Leader and Fire Direction Officer for Bravo Battery, 4th Battalion, 320th Field Artillery Regiment, Fire Support Officer, 2nd Squadron, 14th Cavalry Regiment, and Commander of Headquarters and Headquarters Battery, 2nd Battalion, 11th Field Artillery Regiment. He has served as a small group instructor at the Aviation Captain's Career Course, and as the Executive Officer for 6th Battalion, 37th Field Artillery Regiment, Brigade Executive Officer for 210th Field Artillery Brigade, and Operations Officer for the 2nd Infantry Division Artillery. He is currently stationed at Redstone Arsenal, AL serving as the Deputy Director for the Space Development Agency's Tranche 1 Space Operations Center.

The Field Artillery Battalion S2 and the Integrating Processes

By: CPT Preston Quinn

Together, field artillery and military intelligence can be greater than the sum of their parts. However, to achieve their maximum potential organic field artillery battalion (FA BN) S2s must sufficiently and accurately inform the FA BN commander's decisions and the brigade's lethal targeting efforts. The unit's mission cannot succeed if fires and intelligence fail to coalesce around their shared responsibility to lethally target capabilities on the brigade's high payoff target list (HPTL). Unfortunately, some FA BN S2s – even the best among us – fail to make ourselves relevant to FA BN commander decision-making and brigade lethal targeting.

Armor and infantry brigades are both assigned a field artillery officer (MOS 13A) by the modified table of organization and equipment (MTOE) to fill the FA BN S2 billet – only Stryker brigades are assigned a military intelligence officer (MOS 35A). Despite this, from my observation, military intelligence officers most often fill 13A slots and thus bring different skills and experiences out of primary military education (PME) to bear on the FA BN's operations than intended. Therefore, it is vital that post-PME development must establish a set of unified set of expectations on how a 35A or a 13A perform as the FABN S2.

Based on rotational observations and doctrinal references, I make several recommendations to FA BN S2s – regardless of MOS – that will make them more effective contributors to the unit's mission. On the other hand, to FA BN leadership, if your FA BN S2 is not meeting expectations, consider coaching them on the below points – they will often be the root cause from which a failure to meet expectations is just a symptom. I will introduce to S2s the concept of integrating processes defined by ADP 5-0 as an informative perspective for understanding an FA BN S2's role and responsibilities.

The intelligence warfighting function is vital to the Army's integrating processes – a fact that is sometimes lost on its practitioners and is directly tied to the success of an FA BN. An integrating process “consists of a series of steps that incorporate multiple disciplines to achieve a specific end.” ADP 5-0 identifies the following five integrating practices:

- Intelligence Preparation of the Operational Environment (IPOE)
- Information Collection (IC)
- Targeting
- Risk Management
- Knowledge Management (KM)

All five of these practices are

well-nested inside the significant intelligence warfighting tasks (See Figure 1).

Practice #1: Intelligence Preparation of the Operational Environment (IPOE)

The first cardinal error S2s make is typically a failure to fully understand their information gaps. Ask questions early and often. It is the mark of a good S2 to know their information gaps. Utilize an active Request for Information (RFI) Plan in IPOE Step 1 to resolve information gaps whether the appropriate source is the higher echelon, national resources, or the skilled and experienced staff that share the main command post (MCP) with the S2.

The second cardinal error many S2s make is to devote too little emphasis to topics that deserve it during IPOE, or conversely, to emphasize things that don't matter. This typically occurs for two reasons: first, MICCC trains its students to be a maneuver S2, not an FA BN S2; second, the S2 likely has not sufficiently acquainted themselves with field artillery doctrine.

Just because something is important to the S2 does not entail that it is important to the FA BN commander, staff, or battery com-

Intelligence Warfighting Function

The related tasks and systems that facilitate understanding the enemy, terrain, weather, civil considerations, and other significant aspects of the operational environment (ADP 3-0).

The intelligence warfighting function tasks are—

- Provide intelligence support to force generation.
- Provide support to situational understanding.
- Conduct information collection.
- Provide intelligence support to targeting.

Figure 1. Significant Intelligence Warfighting Tasks. FM 2-0, pg. xii, 01OCT2023.

manders. Doctrine recognizes this problem by explicitly stating that the mission analysis brief may consist of “Initial IPB [IPOE] products that impact the conduct of operations.” Restriction of IPOE products to those relevant to the commanders and staff in doctrine is a direct reflection of the reality that time is an omnipresent constraint on military operations. The S2 should be ready to brief it all and know it all, but the S2 cannot let the “so-what” become de-emphasized. By emphasizing everything, an S2 emphasizes nothing.

How does the S2 know what is important? S2s should place an emphasis on the IPB products listed in Fires doctrine. An S2 must read field artillery doctrine to understand the decisions, capabilities, and limitations of the FA BN and its commander. The ATP 3-09 series is the best place to start. The baseline for IPB familiar to intelligence professionals is ATP 2-01.3, however, the most important additional reference specific to an FA BN S2 executing MDMP and IPB is ATP 3-09.23, para. 1-35 and para 1-49.

The best S2s can gather and synthesize information and judgements from the staff and integrate it into IPOE, IC, and targeting. My observation from rotations is that S2s that fail to adequately capture the expertise and good judgement of the staff can make inappropriate or irrelevant recommendations to the commander. To that end, S2s should execute continuous “reverse IPOE,” a process in which the S2 gathers information from staff members and even enlists their assistance to design products – e.g., the modified combined obstacle overlay (MCOO),

enemy COAs, and the event template.

Just as the US Army has its own language, each branch of military specialization also has its own language. An S2 that fails to speak the language of the commander and staff they serve will ultimately fail to achieve relevance. Does the S2 understand the logical basis and practical implications

of the coordinating fire line (CFL) and fire support coordination line’s (FSCL) locations on the battlefield? How does the brigade’s placement of intelligence control measures like the intelligence handover line impact how intelligence and fires coordinate? Does the intelligence handover line adequately support sensor-to-shooter links to the FA BN commander’s batteries? An FA BN S2 that speaks to these questions demonstrates that they understand the fault lines in the fires-intelligence complex and is identifying risks for the commander’s consideration.

Practice #2: Information Collection (IC)

A fact that becomes obvious to all S2 sections attempting to plan information collection is the absence of any collection assets with reach beyond the Forward Line of Troops (FLOT). FA BN S2s seem to accept that this means their collection assets cannot be put to good use. This is not accurate. The FA BN’s organic collection plan must focus on indications and warnings intelligence (I&W). All battalions in a maneuver brigade have collection assets that are intended for local reconnaissance and provide I&W intelligence – the reason a maneuver BN can collect beyond the brigade FLOT is because they are usually positioned on it, so I&W intelligence for that unit necessitates observation beyond the FLOT. The FA BN S2 can still derive value by using organic collection assets to monitor likely threats to the FA BN, albeit behind the FLOT. With appropriate line-of-sight the S2 can establish an additional de-

fensive perimeter using the asset as a ground-based electro-optical sensor. The FA BN MCP and batteries can mount their assets on tall poles (anecdotally, the OE-254 post has been used although that is not its intended purpose) to serve as an “eye-in-the-sky.” In the event of an enemy penetration of friendly defensive lines, the FA BN should utilize their collection platforms to identify enemy movements within the brigade rear area for its own protection and to keep the brigade’s response maximally informed.

Practice #3: Targeting

The Assistant S2 (AS2) is the FA BN S2 section’s targeting officer and counter-fire officer. This reference is misleading. By MTOE, no brigade combat team is allocated an AS2 billet. One could infer that the BN targeting officer or counter-fire officer would be best positioned to serve additionally as the FA BN AS2. This point of doctrine requires clarification.

ATP 3-09.23 makes this interesting claim despite no FA BN being assigned an AS2. The targeting officer needs to have three distinct points of contact at brigade to sufficiently inform brigade targeting efforts: the brigade intelligence support element (BISE), the brigade collection manager, and the brigade field artillery intelligence officer (FAIO).

The most important role the FA BN S2 section plays in brigade targeting efforts is their refinement of the brigade S2’s assessment of enemy position areas of artillery (PAA). The FA BN AS2 should come to a common understanding with the BISE on the assessment of enemy artillery tactics, artillery capabilities and vulnerabilities, and the probable locations of enemy PAAs. Similarly, as an interested party in the counter-fire fight, the FA BN AS2 should normalize assessments of enemy radar position areas (RPA), sectors of search (SOS), and frequency bands, frequency ranges with the BISE.

The FA BN AS2 must also work with

the brigade collection manager to ensure that the FA BN commander's chief concerns – enemy artillery, enemy weapons-locating radars (WLR), and HPTs – are addressed in the brigade IC plan. In particular, the FA BN AS2 should ensure that friendly WLRs are incorporated into the IC plan using cueing, cross-cueing, and mixing. If possible, the FA BN commander's priority information requirements (PIR) should also be nested within the brigade commander's PIR to give better chances of answering those PIR since the organic FA BN collection assets are insufficient to address all the commander's PIR. The FA BN S2 can provide unique value to the brigade collection manager by ensuring that the brigade IC plan sufficiently pursues information that is essential for accurate target identification, target verification, and combat assessment – all of which support the decide, detect, deliver, assess (D3A) targeting methodology.

Lastly, the FA BN AS2 should provide input to the brigade FAIO regarding the brigade's HPTL, target selection standards (TSS), and target selection matrix (TSM).

Practice #4: Risk Management

FA BN S2 support to risk management falls under the intelligence warfighter's responsibility to support protection operations. Essential contributions the S2 section needs to make to the FA BN are:

The FA BN S2 should recommend survivability move criteria to the FA BN S3 and MCP jump schedules to the staff to mitigate enemy targeting operations. The single greatest threat the FA BN faces in large scale combat operations (LSCO) is counter-battery fire enabled by WLRs. Following enemy artillery fire, the S2 must also consider the threat posed by enemy rotary and fixed-wing air assets, unmanned aerial systems, special purpose forces (SPF), and operational security (OPSEC) compromise from non-hostile actors in the operational environment (e.g. civilians taking photos of FA BN PAAs and

posting them online).

Ensure subordinate and supporting units are kept informed of the enemy situation. The action elements of the FA BN are its batteries and WLRs. Leaving the batteries in the dark regarding risks leaving the FA BN's most forward element unprepared to mitigate the risk contingent with large-scale combat operations (LSCO). Ask the battery commanders about their decision points and provide the relevant inputs to those decision points. This provides battery commanders a greater ability to design an appropriate PAA defense plan. In a similar vein, the FA BN S2 should provide input to the creation of the WLR's cueing schedule to prevent the enemy from acquiring and exploiting their positions.

Practice #5: Knowledge Management

There are three essential events which occur in the knowledge management life cycle of the FA BN S2 section. First, the acquisition of existing knowledge at the beginning of the operation. Second, the creation and storage of new knowledge during the operation. Third, the long-term storage and assessment of knowledge at the end of the operation in preparation for the next mission. These phases apply to both digital (sharepoint, sharepoint, portal, email, messaging services) and analog repositories (maps, acetate sheets, printed products, trackers, event logs, chit sheets used for transmission within the MCP). Ask the following questions:

- ◇ How is information stored?
- ◇ When are information trackers updated?
- ◇ Who updates information on running products?
- ◇ What sources of information are considered credible?
- ◇ Who needs to know?
- ◇ How is information transmitted to those who need to know?
- ◇ What information supports the commander's decision points?
- ◇ What information would trigger the use of fires to prosecute targets?

- ◇ What information would be worthy of follow-up collection (cueing, cross-cueing, mixing)?

Conclusion

The combined intent of all the above recommendations is to ensure the FA BN S2's relevance to the FA BN commander and staff, but also to the larger collection and targeting efforts that the FA BN commander relies on and supports, respectively. It is common for S2s to know their explicit responsibilities to their commander and staff. It is much less common for S2s to understand how their work influences beyond their immediate commander and to the larger organization. As a channel for influence, there is perhaps no BN S2 for whom the integrating processes are more important than the FA BN S2.

Captain Preston Quinn is the Field Artillery Battalion S2 Trainer for JMRC's Operations Group in Hohenfels, Germany. He is a 9-year Military Intelligence Officer with experience supporting the maneuver, fires, and sustainment warfighting functions. CPT Quinn has one deployment to CJTF-OIR where he supported counter-insurgency operations as a part of the 3d Cavalry Regiment's (3d CR) "Longknife" Squadron in Nineva, Iraq from 2018 to 2019. CPT Quinn commanded Headquarters and Headquarters Company, 504th Expeditionary Military Intelligence Brigade (EMIB) at Fort Cavazos, Texas from 2021 to 2022.



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Increasing Effectiveness of the Counterfire Chain

TAP, 2-3 FA, 1 ABCT, 1 AD

By: 1LT Jerard Stoegbauer

During the rotation of the 1st Armored Brigade Combat Team, 1st Armored Division, the 2nd Battalion 3rd Field Artillery Target Acquisition Platoon (TAP), Counterfire (CF) Cell, and Battalion leadership, implemented a variation of the “normal” counterfire chain. The variation utilized was the “sensor to shooter” kill chain method in which acquisitions from the radar sections would be sent straight to the dedicated counterfire battery (CF BTRY), in this case Charlie Battery. When applying this method, it helped the Counterfire processing time be a third faster than the two-year Rotational Unit average. This paper will include the necessity for mission command, sensor to shooter operations, cueing, utilizing security elements for protection, and the target acquisition platoon leader (TAPL) involvement in operations.

Mission Command is the cornerstone of all operations. It drives information flow and allows elements to achieve the commander’s intent. The TAP itself is very leadership heavy. The AN/TPQ-53 is the Brigade Commander’s organic counter-battery collection asset, the most expensive and delicate piece of equipment on a Headquarters and Headquarters Battery (HHB) Commander’s hand receipt, directed to radiate and move by order of

the Counterfire Officer (CFO), and trained by the Platoon Leader and Platoon Sergeant. Standardization is paramount in ensuring all leaders are on the same page. Information flow was handled three ways during NTC Rotation 24-04: Joint Battle Command Platform (JBCP), FM Voice, and face-to-face. PACE plans are often overlooked because everyone “should” know how to communicate, but with multiple echelons at play, it must be engraved.

While conducting sensor to shooter counterfire operations, there needed to be proper planning to ensure all echelons collected on targeting information. One way was by utilizing the info-copy on the AFATDS. As the radar collected acquisitions, the operators sent the point of origin via FM Voice to the platoon fire direction center (FDC). The platoon FDC inputted the target location into the AFATDS and processed the mission if it did not violate any fire support coordination measures (FSCMs). As that mission was prosecuted, the counterfire cell received an info-copy of the fire mission to enable them to start pattern analysis on the point of origin. The Battalion FDC was also info-copied on the fire missions to ensure proper battle tracking of ammo expenditure.

Another method that proved effective and timely was via JBCP operations. A group chat was created on the JBCP with the radar section, TAP leadership, platoon FDC, CF Cell, and the Field Artillery Intelligence Officers (FAIOs) who were located at the Mission Support Site (MSS). As the radar acquired targets, the point of origin was sent via the JBCP group chat. This way all parties collected on the point of origin. If the target did not violate any FSCMs, the platoon FDC could immediately engage the target. If it was beyond the FSCL, the MSS had the targeting information to see if EAB assets could engage the target. Also, if the target was short of the CFL, the CF Cell had the targeting information and could work with the Brigade (BDE) or Battalion (BN) Fire Support Elements (FSEs) to enable clearance to prosecute the target. A few mortar fire missions were acquired and fired back on by our mortars. All in all, this system enables echelons to action targets. With proper communications and standardizations in place, the TAP acquired and prosecuted enough targets to destroy almost a battalion’s worth of enemy cannon artillery and numerous rocket artillery assets.

While the kill chain allows for prosecution of targets, it is nothing without successful movement and cueing. During the NTC Rotation, the TAP exercised "talking radars" to mitigate detection. The cueing schedule was dictated by the enemy threat of detection. After one cumulative hour of cueing, the radar would shut down and immediately the other radar would power on and begin its cueing schedule. While not radiating, the radar section had enough time to conduct a survivability move and PMCS their equipment. This battle rhythm led to zero deadlines throughout the entire rotation. Survivability moves were quick and efficient given a proper communications structure. The COM-201 provides enough line-of-sight range to be far from the platoon FDC. Also, it provides enough maneuverability, since it is attached to the vehicle antennae mount, to emplace and displace quicker and more efficiently without having to set up an OE-254. Structured cueing and working communications structures allow the radar sections to troubleshoot less, conduct proper maintenance, and process more fire missions.

While operating in a large-scale combat operations (LSCO) environment, radars have three methods of protection: movement, as aforementioned, a security detail, and air defense artillery (ADA). During NTC Rotation 24-04, a security detail, a platoon of military police (MPs), escorted the radars while moving and set up a defensive posture while the radars were stationary. Also, an ADA battery was tasked with providing coverage over the radars. The ADA, strategically placed between the radars and the brigade support area (BSA), shot down multiple enemy aerial assets, leading to a higher survivability rate and ensuring the radars stayed in the fight. The necessity of the MPs and ADA proved effective but needed some time to be managed. The target acquisition platoon leader (TAPL), in conjunction with the HHB Commander, play a crucial role in sustaining these assets. Class I and III projections for these enablers needs

to be calculated into HHB's numbers and a battery "LOGPAC" needs to be sent out to resupply. The TAPL and/or TAPSG can provide this LOGPAC, talk to the enablers, and make sure they understand future radar locations to allow for more autonomy in continued operations.

Lastly, all these processes are enabled by the TAPL and CFO. The TAPL plays a delicate leadership role while conducting operations. They do not control what the radars do or do not do. That is dictated by the CFO. However, they are the adviser to the CFO. As the CFO is present and aware of the battlespace at the brigade and even division level, the TAPL needs to be present and aware of the battlespace at the battalion, battery, and section level. This delineation is key in the development of suitable radar deployment orders (RDOs). The TAPL and CFO need to understand that balance and develop a relationship to enable protection, proper communication, and sustainability of the radar sections. Presence at the CF Cell, BN TOC, and the radars themselves allows the TAPL to advise the CFO accordingly.

In conclusion, this NTC Rotation proved and disproved many systems. The sensor to shooter counterfire net, development of proper cueing schedules, and effective protection enablers allowed the TAP of the 2nd Battalion 3rd Field Artillery Regiment to implement many battle rhythms into their tactical standard operating procedures (TACSOP). These lessons learned are documented here to help enable future rotational units and hopefully shape the thought process around what a TAP can or cannot do as the Army continues to look at and rewrite LSCO doctrine.

1LT Jerard R. Stoegbauer is currently serving as the Executive Officer for Assassin Battery, 2nd Battalion, 3rd Field Artillery Regiment. During his career he has served as a Fire Direction Officer, Fire Support Officer, and Target Acquisition Platoon Leader.

INNOVATION AND REVERSING NEGATIVE TRENDS

Reversing Negative Fire Support Trends

For centuries it has been said that necessity is the mother of invention. Modern interpretations of this old proverb have been expressed in many ways, but the essence of the message behind it is that when you really need a change, innovation will eventually bring about one. Simply put, a need stimulates experimentation which eventually yields a solution. Perhaps nowhere could this be more applicable than when confronting the challenge of reversing longstanding negative fire support trends in the Army's Combat Training Centers. The necessity is obvious, and the trends have been stubbornly similar for decades now.

The Army training model and feedback mechanism that we call the After-Action Review (AAR) is a sacred, time-tested model which allows unit leaders to discuss what was supposed to happen, review what DID happen, and then examine what can be done better. It is a model which emphasizes the close examination of problems to see where we went awry, and then addresses ways to fix these mistakes. Fire support AARs at NTC for some thirty to forty years follow a strikingly similar pattern in that there is a consistent repetition of the same negative themes. But, merely emphasizing what went wrong isn't exactly helping improve fire support performance, necessarily. Modern research about human performance reveals that this approach is faulty and asserts that repeating the things we do well can generate faster, longer lasting performance improvement.

This article is not about arguing the merits of either approach. The focus of this essay is on sharing recent innovative techniques and practices that are effectively reversing longstanding negative trends. We'll just call them experiments, or in even plainer terms they are innovative attempts at a new technique to find out if it works better. When they work better, it only makes sense to try and repeat them, and then share them. The big idea behind doing this is that we can share what is working well, and in sharing the successful technique we can help promote improved performance across the fire support enterprise in the Army's Brigade Combat Team formations. It is in this spirit that our

essay is presented, with the hopes that repeated performance of things that are working right will generate improvement. The evidence and information presented by the authors of this article is based on two recent rotations at the National Training Center in FY 24, and the opinions and assertions in the essay belong to the authors exclusively. They do not represent an official view of the Field Artillery School or the Army's Training and Doctrine Command, or even the Department of the Army. Using practices attempted at the National Training Center during rotations NTC 24-04 and NTC 24-09, we will share evidence of successful innovations that are helping to reverse longstanding negative fire



Fire Support Trends

1. Fires Rehearsals do not use fighting products
2. Linking Intelligence Collection with Fires through Targeting (D3A) and then Execution in the Command Post.
3. Balance of the Role between FA BN CDR and FSCoord.
4. Enabling the Counterfire Fight. Inadequate response times w/ too many intervention points.
5. Observer Planning. Lack of refinement in target and observer location, and communications degrades accuracy, responsiveness and effect.
6. Digital Communications Units struggle to maintain an uninterrupted communications architecture from sensor-to-shooter.
7. Linking intelligence, fires and maneuver in planning.
8. Main CP/Tactical CP Architecture/handover.

Fig. 1 These eight, stubbornly persistent fire support trends haunt Brigade Combat Teams as they strive to conduct mounted combined arms operations in an austere environment against a near-peer adversary

EXPERIMENTATION

trends at the National Training Center

By: LTC Erick Buckner, LTC Justin Cuff, CW2 Kory Engdall , and COL(R) Kevin Batule

support trends (see figure 1). So, as we gathered insights from leaders in both the First Armored Division and Third Infantry Division from their recent NTC rotations, our attention was laser-focused on techniques which helped reverse the negative fire support trends.

Ready First Brigade Uses Innovative Techniques w/ MSS, Counter-battery fires and Observers in NTC 24-04

With new challenges come new opportunities, and those new opportunities can help drive change. As units train to fight in Large Scale Combat Operations, doing what we've always done may not be the answer if it isn't going to guarantee successful integration of fire support for the Brigade Combat Team. 2nd Battalion, 3rd Field Artillery Regiment (2-3FA) tested and validated a unique mission set this past February which yielded some rather successful fire support innovations during NTC 24-04. 1st Armored Division challenged the Ready First Combat Team to plan, prepare, and execute operations without Upper TI at the brigade and battalion command posts. A first time use for a unit at the National Training Center, the Ready First Brigade employed a Mission Support Site (MSS) in sanctuary at Santa Fe while the Main Command Post (MCP) was forward deployed in the box.

During the rotation the Ready First Brigade and 2-3 FA used this challenge as an opportunity to try three innovative new techniques: 1) A Ro-

bust MSS for Targeting 2) A Quick-fire Counterfire lash-up and 3) A Risk Estimate Diagram to improve Observation Planning.

Mission Support Site (MSS) Implementation

Implementing the MSS (see figure 2) placed a huge demand signal on manning because it meant that the brigade would operate two distinct command posts simultaneously, and this challenge also forced the brigade to carefully evaluate the roles and responsibilities of each of these two nodes. At first the idea was that the MSS would operate as outlined in ATP 2-19.4 (Brigade Combat Team Intelligence Techniques), which defines its role as "collaborating and disseminating information, intelligence products, and analytical conclusions with the rest of the BCT intelligence cell elements and higher headquarters." With the constraint of no Upper TI at the MCP, it quickly evolved into

much more than this. Importantly, this would be the only node with Upper TI to push and pull digital products to and from the 52ID. Consequently, more warfighting functions were needed at this site to operate effectively.

The MSS was manned primarily with personnel from the Brigade Intelligence Support Element (BISE), augmented by FSE, ADAM/BAE, JTACS, ISRLO, SWO, JAG, and PSYOPS. In the beginning, the communications were completely reliant upon JBC-P / IJBC-P chat rooms and SMDLs to send products back and forth. Understanding this, the BDE set up a JBC-P academics training period to establish a standard method for product dissemination and chat room functionality. By doing this the BDE set conditions for continuous improvement and eventually established integrated tactical network (ITN) and joint network node (JNN) with 52ID, as well as HF, FM,



Figure 2. Mission Support Site at work in the National Training Center, June 2024.

& SATCOM which grew in functionality throughout the rotation. These were provided by different staff sections and throughout the duration of NTC were slowly implemented between the MSS and MCP. Not only did the MSS have the ability to communicate to the critical fires capabilities resident with the 52ID, it was given the authority to employ them. The essential ingredient to success of the MSS was the Decision Authority Matrix approved by the BDE CDR. Given only intermittent comms with the MCP, it was necessary to allow the Field Artillery Intelligence Officers (FAIOs) to assume the same responsibilities as the BDE FSO. Specifically, this meant dynamic Re-tasking of CAS, ISR, and employment of Grey Eagle Hellfire missiles. Doing this ensured that no sortie went home still

loaded with ordnance and it proved to be instrumental in the shaping of the deep fight. The BISE team also had a more accurate SITTEMP of the enemy than the MCP because it collected and consolidated HUMINT, SIGNINT/ELINT, OSINT, IC, Civil Affairs, PSYOPS, and other sources of information the BISE can collect. This resulted in a more aggressive approach with a more complete picture of the targeting process.

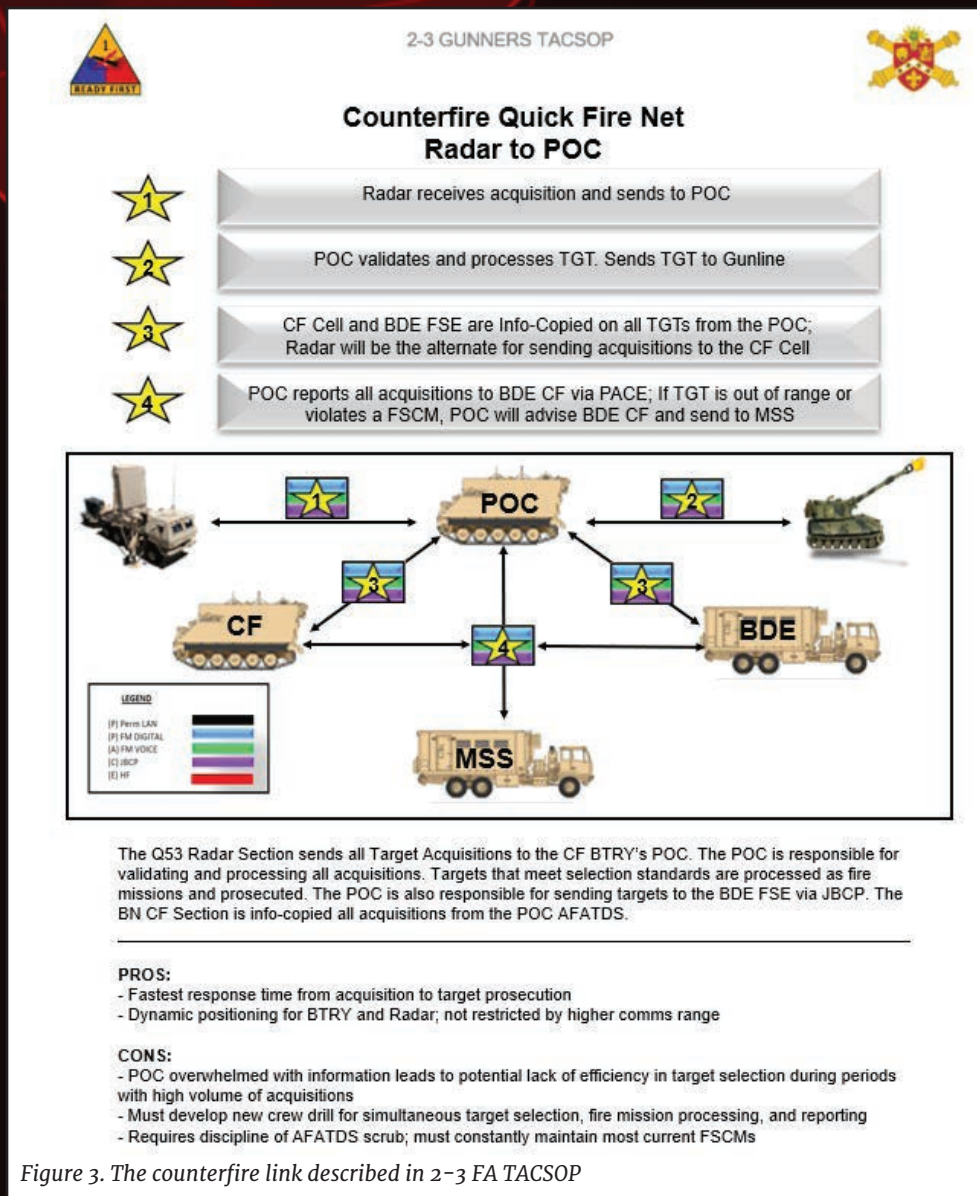
Another capability that was a huge contributor to the MSS was our Airforce counterparts - the JTACs and ISRLO. Both brought a level of competence, expertise, and equipment to attack targets both in the close and deep. They operated alongside the GEOINT cell to resource the exploitation of FMV, GMTI, Airborne and satellite imagery. As well as,

provided HF and SATCOM capabilities back to the MCP during times when comms was degraded. The ISRLO was well versed in coordinating sensor tasking of Army and Airforce platforms while performing ISR Tactical Control with multiple assets flying. In conjunction with this, utilizing the Decision Authority Matrix, FAIO's had the authority to allow dynamic employment of Grey Eagle Hellfire utilizing the JTAC's.

Counter-battery Quickfire Net

Field Artillerymen who have prepared for and fought at NTC understand the inherent challenges in the counterfire fight. Traditional linkage of the counter-battery chain in the BCT involves a complex and circuitous routing from radar to brigade to a controlling Headquarters, and then ultimately to a shooter. Frankly, this takes an excessive amount of time to process. As the Ready Brigade FSCOORD, the 2-3FA's CDRs intent was to eliminate redundancy in the sensor to shooter chain and decentralize the AN/TPQ-53, CF section (located at the MCP), and Charlie Battery for expedient fires (see Figure 3). At first a seemingly daunting task, it required teaching and training the battery commander, fire direction officers and NCOs how to understand and manage the language required to prosecute the CF fight. Terms like "point of origin," "air clearance," and "handover to the MSS" were completely foreign to most of these personnel.

Once the fundamentals were clearly defined, it was time to exercise them. The brigade conducted numerous training exercises to master their craft, including CPX I-III, Table XVIII and LTP 24-04. Although the digital architecture between the nodes was intermittent and gave us trouble throughout NTC, the voice missions straight from a radar to a designated CF battery by reducing the traditional intervention points still proved to be a huge improvement in response time. The brigade also took advantage of the JBC-P linkage to pass acquisitions in the deep fight directly to the MSS when the MCP was displacing.



Another key role in the success of our CF was the GEOINT section at BDE. Utilizing what they called, “the science project” (see article in a previous journal article by CPT Jason E Martos called “Probable Position Areas for Enemy Artillery”) the brigade CF cell analyzed the terrain based on slope, hydrology, lines of communication, intervening crests, and MSRs in ArcGIS to identify where enemy forces would place their artillery. This allowed them to accurately locate PAAs the enemy would use and plan to attack them using more accurately developed zones. Zone refinement and management is crucial in the prioritization of fire mission processing. The goal was to have six active zones simultaneously, two CFZs and 4 CFFZs that mirrored the threat and scheme of maneuver. The FAIOs in the MSS were able to construct a heat map based on “the science project” analyze the CFO’s zones and provide recommendations for adjustments to them.

Observation Planning

A successful fire support plan integrated into the targeting process (D3A) needs a solid observation plan, understood at the lowest level. ATP 3-09.42 (Fire Support for the Brigade Combat Team) states “Observer positioning needs to be top driven with a requirement to provide detailed refinement in order to ensure effective target attack.” And this is exactly what was expected of the BDE FSE. Understanding the 6-step technique, BDE FSE conducted initial observation planning synchronized in the Target Working Group. Once complete those grids were sent back to the MSS for further analysis. At the MSS, the FAIOs along with the GEOINT team utilized ArcGIS to plot the targets and initial OBS locations. Then implementing the Risk Estimate Diagram (RED) (shown at Figure 4) and line of sight analysis the fire support enterprise could look at the suitability/feasibility of each OP and provide refinements back to the MCP.

The MCP would then codify the re-

Table 88. Unguided Cannon and Rocket REDs					
System	Description	DANGER CLOSE (meters)	Range	0.1% Probability of Incapacitation (meters)	
				Standing	Prone
M119/ M119A2	105-mm Howitzer HE PFF (M1130)	600	1/3	285	275
			2/3	355	345
			Maximum	505	495
	105-mm Howitzer HE (M1 Comp B/ M760)	600	1/3	360	320
			2/3	400	375
			Maximum	540	515
	105-mm Howitzer HERA (M913 HERA/ M927 HERA)	600	1/3	330	295
			2/3	460	435
			Maximum	660	635
M109A6/ M109A7 M777A2	155-mm Howitzer HE (M795/M795 IM)	600	1/3	385	355
			2/3	515	485
			Maximum	730	710
	155-mm Howitzer DPICM (M483A1)	600	1/3	225	215
			2/3	295	285
			Maximum	410	405
	155-mm Howitzer DPICM (M864)	600	1/3	265	260
			2/3	405	395
			Maximum	715	705
155-mm Howitzer RAP (M549A1 RAP)	600	1/3	380	350	
		2/3	600	565	
		Maximum	1045	1025	
M142 HIMARS/ M270A1	227-mm M26A2 DPICM Rocket	600	1/3	415	410
			2/3	760	755
			Maximum	1410	1405

Notes: All ungrayed systems and P_i are unclassified unless specifically marked as (CUI).

Legend:
 comp—composition
 CUI—controlled unclassified information
 DPICM—dual-purpose improved conventional munitions
 HE—high explosives
 HERA—high-explosive rocket-assisted
 HIMARS—High Mobility Artillery Rocket System
 IM—insensitive munition
 mm—millimeter
 P_i—probability of incapacitation
 PFF—preformed fragmentation
 RAP—rocket-assisted projectile

Figure 4. Risk Estimate Diagram

finements, re-align primary and alternate OBS, and capture it in the Annex D for maneuver battalions to provide bottom-up refinement. It was critical for the BN/CO FSOs to understand the OPs provided were general locations and the FO’s once on ground had leeway to occupy anywhere in the general location. Following the publishing of Annex D, the IC and Fires rehearsal would begin. FSOs will talk their scheme of maneuver, TTLODAC, and announce triggers for their targets as well as OBS plan as they proceed. Immediately following the IC and Fires every FSO had 2hrs to provide target refinements before heading into the Fires Technical rehearsal. Enforcing the target refinement

cutoff was extremely helpful to ensure all products were finalized before the technical rehearsal began.

First Brigade, Third Infantry Division Fire Support Success Built on Innovative Use of Starlink and Hawkeye in NTC 24-04

Perhaps no combat arm so heavily relies on the ability to communicate to perform its basic function as does the Field Artillery. Take a disciplined and well-trained infantry company, for example. If you remove its ability to communicate but provide it with intent, it has a reasonable chance of accomplishing its mission. For the Field Artillery,

this becomes a more difficult proposition. Since the rapid successes of German armored formations in the Second World War, armored formations have relied and continued to rely upon tactical FM radios to communicate. In today's U.S. Army, the SINGCARS RT-1523 with its ancillary equipment remains the tactical workhorse of the artillery across the kill-chain for both voice and digital communications.

As a result of our continued reliance on the RT-1523, BCTs at our CTCs continue to struggle with maintaining digital communications and executing digital fire missions. It is time to end our dependence on the RT-1523 and FM communications for digital fire mission connectivity. During NTC 24-09 1st Brigade Combat Team, 3rd Infantry Division employed Starlink and Hawkeye systems at critical nodes which provided reliable Tactical Internet Capability to the BCT's kill chain, resulting in a record amount of missions fired at a higher level of effectiveness than normally produced at the National Training Center!. This accomplishment is a profound reversal of the trend # 6 stated during the introduction about digital communications struggles. Based on this convincing data from the innovative Marne Division experiment, the argument that each battalion and higher fires node within a BCT's fires enterprise must have its own dedicated Upper-TI capability is not only a sound one, but it is an

absolute imperative! Ensuring a resilient, reliable, and efficient digital kill-chain is a key ingredient for timely and consistent execution of effective fires.

A preponderance of the difficulties with FM digital communications occur within the fire support half of a BCT's kill chain, unnecessarily delaying and slowing the linkage from the fire support half to the field artillery half. How does this play out? Take a BCT on the offense, for example. Combined Arms Battalions (CAB) receive their missions and determine where they must establish their command posts to provide adequate command and control of their formations while maintaining communications with the BCT. This often necessitates forward positioning of their command posts and mobile command groups, which inevitably include their battalion fire support officers. As a result of this forward positioning, battalion fire support elements are frequently positioned out of range to pass fire missions digitally over tactical FM radios to either the brigade Fire Support Element (FSE) or FA battalion Fire Direction Center (FDC). The BCT may have a plan to mitigate this risk using its organic retrans assets, but this quickly falls apart due to maintenance challenges, enemy action, or several other possibilities. Consequently, the lack of digital communications now necessitates voice or JBCP missions from all four battalion/squadron

fire support elements to the BCT's fire support element, resulting in a clogging of the voice communications net, easily overwhelming the Brigade's FSE. This causes friction and the inability to handle large volumes of fire missions in a timely manner at the BCT's FSE. BCT FSE personnel must input each fire mission manually into AFATDS and send to the FA BN or to Division for prosecution – if they even have digital communications with those echelons. In the middle of handling six different missions, digital communications with the battalion FDC is lost and troubleshooting must occur. Fire missions which are stacked upon each other now take more than 30 minutes to process and complete. In some cases, the target attack is never completed.

During NTC 24-09, the 1-41 FA battalion FDC, equipped with the Hawkeye maintained reliable Upper-TI digital fire mission capability with the BCT FSE, which was equipped with Starlink.(both commercial VSAT antennas shown in figure 5) The reconnaissance squadron's FSE maintained digital firing capability using Starlink, and was able to communicate directly with both the BCT FSE and FA BN FDC. The MSS, also fielded with Starlink, maintained communication with all of the above. Maintaining Upper-TI digital fire mission capability between these nodes enabled a reliable digital kill chain. They were able to maintain communications without the need to continually troubleshoot the lack of digital FM communications, enabling the crews to focus on the execution of fire missions. Receiving and sending fire missions digitally as opposed to voice enabled a far more rapid execution of fires, as the operators were now able to send and receive using clicks instead of reading back voice commands. The rapid execution of fires resulted in a higher effectiveness rate normally seen, as less time passed between when the fire missions were called by observers to when rounds impacted their intended targets. The rapid execution of fire missions enabled a far higher volume of fires, clear-



Figure 5. Commercial off the shelf Starlink and Hawkeye Systems

ing out fire missions quickly at each node. The level of bandwidth brought to the table by these systems enabled the BCT FSE and BN FDC to perform far better FSCM management, resulting in more accurate databases throughout the kill-chain.

Conclusions and Thoughts for the Future

Innovation and experimentation by leaders in National Training Center rotations 24-04 and 24-09 paved the way

for enormous success, reversing at least four of the eight stubborn trends which we presented in the introduction. Let's look at what they did specifically:

1. Use of a well-resourced MSS with authority to attack targets enabled the Ready First Brigade to rapidly integrate maneuver, fires and intelligence and execute fires that set timely conditions for current operations.
2. Innovative use of GEOINT analysis and application of a quick-fire link reduced response times and enabled a much more responsive counterfire fight.
3. Use of GEOINT products and a Risk Estimate Diagram improved observer planning and location accuracy, resulting in a more accurate sensor to shooter link.
4. Experimentation by First Brigade Third Infantry Division's Fire Support Enterprise with VSAT systems produced a consistent digital kill chain with record success and a much more effective fires than normally demonstrated at NTC.



2-3 FA Gunners demonstrate speed and accuracy at the National Training Center, February 2024

The above achievements are significant and certainly a positive sign. They also point to two slightly more significant takeaways:

1. Upper TI is a Must. Our command posts in the BCT digital kill chain need to be fielded with a dedicated upper TI capability and necessary bandwidth to handle large volumes of fires and continuous database management. We in the Field Artillery community must continue fighting for the Army to field BCTs and DIVARTYs with this capability, to include the fire support elements supporting combined arms battalions. This far more survivable, resilient to jamming, reliable, and efficient means of passing digital fire missions will enable Field Artillery assets to truly provide timely and accurate fire support.
2. Sharing What Works. Leaders from 2-3 FA and 1-41 FA conducted several numerous lesson-sharing exchanges about what worked well in their training. Not only does it speak volumes about the drive, intellect and insights of the leadership

in these Field Artillery organizations, it is also proof positive that repeating the things we do well can generate performance improvement!

CW2 Kory Engdall is the Brigade Targeting Officer for the 1st Armored Brigade Combat Team, 1st Armored Division. He is a recent recipient of the 2023 LtCol (R) Michael Grice Writing Award.

LTC Erick Buckner commands the 1st Battalion 41st Field Artillery Regiment at Fort Stewart GA. He is from Edmond, Oklahoma and served with Operations Group at the National Training Center on the Bronco and Wolf teams post battery command.

LTC Justin Cuff is the Commander of 2nd Battalion 3rd Field Artillery Regiment "Gunners" and the Fire Support Coordinator for 1st BDE 1st Armored Division "Ready First".

COL(R) Batule is the FA Battalion Coach at NTC's Leader Training Program, and he has previously contributed to the FA Journal.



MANUFACTURING MEETS INNOVATION

For over 50 years, General Dynamics Ordnance and Tactical Systems (GDOTS) has been the industry leader for the manufacturing of indirect fire artillery and mortar metal parts. Through the design, development, and production of extended range cannon artillery munitions, GDOTS is now a complete solutions provider for legacy and next generation artillery systems, delivering critical capabilities to the warfighter making us ***ready today, innovating for tomorrow.***

HOLISTIC FIRE SUPPORT TRAINING PLANS PRODUCE RESULTS

By: CPT Austin Overby and 1LT Zachary Baxter

In the early morning hours of day seven in the “box,” the Battalion Fire Support Officer (FSO) Observer, Coach, Trainer (OC/T) notified 1LT Baxter of a unique development. The OC/Ts from 1-4 IN, the OPFOR unit for the Joint Multinational Readiness Center (JMRC), shared that there was a bounty on the head of the “lead fires guy” for the unit in the north of the “box,” a bounty worth three Burger King Whoppers. The night prior on day six, our Squadron had achieved our Regiment’s mission of turning the enemy’s main effort south into the Regiment’s engagement area (EA). Without a single direct-fire weapon system engagement, we turned an OPFOR unit consisting of a company-sized element of BTRs, T-72s, and BMPs into the Regiment’s EA. This was a direct result attributed to the Squadron’s defense-in-depth concept focusing on a robust fires plan and a strong collection plan integrated into an equally strong obstacle plan.

The 1st Squadron, 2d Cavalry Regiment (1-2CR) Fire Support Team (FIST) found success throughout our time at JMRC based on two key factors: trust and individual competence, both of which came from our intensive and holistic training plan. These two attributes are fundamental aspects of any organization, none more important than fire support. The speed at which we apply indirect fires can mean the difference between life and death on the

battlefield. Stephen Covey, author of *The 7 Habits of Highly Effective People*, said it best, “nothing is as fast as the speed of trust.”

SITUATION

In January of 2023, 2CR rotated down to JMRC for a Regimental Field Training Exercise (FTX), Dragon Ready 23 (DR23), where our Squadron Fires Enterprise, in short, failed. Our executive summary (EXSUM) from our OC/Ts at the time phrased it as “clearance of Fires was a significant weakness above Troop level mortars” and they observed many other “issues related to the kill chain, and timely/accurate prosecution of pre-planned and dynamic targets.” Our FIST had produced planned Squadron fire missions that took an average of over 15 minutes to process, communications (both digital and voice) that could not keep up with the fight, and a sensor/targeting plan that would produce effects far too late to engage the enemy in depth. While many of these problems could be tied to the recent implementation of the Integrated Tactical Network (ITN), many could be solved with a dedicated training plan within our Squadron Fires Enterprise.

Fast forward seven months to Saber Junction 2023 and the EXSUM for the Squadron’s Warfighting Function (WFF) this time around read, “The Fires WFF proved to be one of the greatest strengths within the Squadron. The ability to rap-

idly prosecute mortar fire missions in order to disrupt, confuse, and fix enemy maneuver formations yielded successful opportunities.” The OC/Ts wrote this EXSUM about the Regiment’s most junior fire support element, with two First Lieutenants, three Second Lieutenants, a Staff Sergeant, and four Sergeants. We were successful because of a holistic training plan that looked to answer the shortcomings from January. We brought in all the key players who share a role within our kill chain. We collectively trained together as one team with one mission, to create the most lethal fires apparatus in the Regiment with a condensed yet safe kill chain. In the coming paragraphs, we will explain the training plan and how the results helped us execute at our latest Combat Training Center (CTC) rotation.

TRAINING PLAN

Trust with Maneuver

How do high-performing teams build trust within organizations? How does a maneuver commander trust his Fires Enterprise to clear ground and air? How can this trust create a more lethal Fires Enterprise? How does this expedite fires? These are all vital questions that build upon the foundations and principles of fire support.

We build trust through competence, competence in oneself, and competence in one’s craft. We, the Fire Support community, ENABLE maneuver. How we successfully inte-

grate our fire support plan and synchronize Fires at all echelons is the very cornerstone of our profession. This is easier and more streamlined by our relationship with maneuver.

How do we build strong relationships with maneuver? **The FSO must always be tied in with the maneuver Commander.** We do this in garrison by having daily interactions with our maneuver Commanders. This can be as simple as stopping by their office and keeping them informed of the FIST training plans or by inviting them to witness Fire Support training firsthand. Daily interactions allow trust to develop with our maneuver counterparts. We also designate two days a week that we PT with maneuver (2CR consolidates the FIST with the line Batteries, therefore we do not typically “fall in” with our maneuver formations). Weekly team-building events build a strong relationship with maneuver, especially with the Forward Observer (FO) and their Platoons/Platoon Leaders. The FIST must also have a strong and routine working relationship with their Troop Mortar Section Chief. The relationship between the mortar Section Chief and the FSO must be airtight. In a tactical environment, the mortars must be involved in planning. They are the subject matter experts on their platform weapon systems and understand tactical mortar firing point (MFP) locations. They know exactly what their rate of fire is and emplacement/displacement speeds. The mortar Section Chief and the FSO must be close to create a lethal fires apparatus.

Call for Fire Trainer (CFF)

Our success at Saber Junction 2023, a JMRC rotation, is due to our training plan. FIST teams need to forecast their training requirements and fight to protect training. The best advice is to get into the CFF Trainer as often as possible. We built a strong training progression centered on training in the CFF Trainer. At the start, we focused on honing the craft of our FOs and gradually started to bring in other pieces of the Fires Enterprise. We

incorporated our Troop mortars, Squadron mortars, and Squadron scouts into the CFF Trainer. Our FOs would identify a target in the simulator, transmit it to the Troop FIST (centralized option), and the Troop mortars would process the mission. We would have the Troop/Squadron mortars bring their Mortar Carrier Vehicles (MCV) and position themselves outside of the building to where they can lay their tubes. This additional step allowed for more robust training that expedited the processing times for our kill chain. We also made the CFF Trainer a more tactical environment by having our FOs wear their full kit, battlefield effects mimicked with a speaker, and incorporate FO's radios so they would have to key the mic to send a mission, replicating how they truly fight. We included our Squadron scouts, having them send missions to the Squadron FIST then processed by our Squadron mortars. Through this robust and incorporated training plan with maneuver, our mortar mission average processing times were less than two minutes for planned targets and less than three minutes for targets of opportunity at JMRC. This improved our processing times and the relationships built with our maneuver counterparts, specifically the mortar sections, played a key role in our ability to expedite lethal fires.

Digital Sustainment Training (DST) Fires Fifty #2, “If you can’t talk, you can’t win.” Communication is the most important aspect of fire support. It does not matter how perfect your fire support plan is if no one can receive it. You test your communications architecture through DST. It is important to note that **DST is a battle rhythm event that must be conducted weekly!** If your higher echelons have not established any DST battle rhythm, the onus is on you to create and implement one for your formations. It is vital to test and stress the communications architecture both via voice and digital before you arrive at a CTC rotation. Our FIST created our own DST battle rhythm event that incorporated our Squadron kill chain and stressed

our communications PACE plan at a distance. Every second working day of the week, we draw all of our tactical radios and ensure we have both mounted and dismounted communications systems operational. From there, we send and receive fire missions, geometries, and build overlays through our Rugged Handheld Terminal Unit (RHTU)/Joint Battle Command-Platform (JBC-P)/Android Team Awareness Kit (ATAK). To further stress these capabilities, we do these at a distance and incorporate our maneuver elements (mortars/scouts). By practicing these in garrison, we identified friction points within our PACE plan that we knew were not sustainable in the field. Conducting a thorough DST at home station, allowed for serious reflection and the ability to create workarounds in preparation for Saber Junction 23.

During the “A” days of Saber Junction 23, our Squadron Fires Enterprise worked through a daily battle rhythm of DST. We started in the motor pool co-located with our mortars and scouts, then transitioned to DST at a distance. We coordinated with our OC/Ts on our first day of meeting them to execute a true DST at range inside the box. This included our scouts, mortars, each Fire Support Vehicle (FSV), and our Tactical Command Post (TAC) element moving to various locations within the box to conduct DST at a truly extended range, spanning 5-10 kilometers. Not only did this provide an opportunity to assess our systems at the distance we would require from them in the coming days, but provided an opportunity for our vehicle operators to gain a repetition of driving in the environment they would soon find themselves operating in.

Security, Location, Communication, Targeting, Observation, Position Improvement (SLOCTOP)

Within your training plans, build in time every week or every other week of SLOCTOP training. Every Wednesday or Thursday, our Squadron FIST would ruck out to the OP to conduct SLOCTOP/Artillery Skills Proficiency Training (ASPT).

The rucks incorporate a functional fitness aspect to the training while the round-robin training on the OP allowed for mastery of the basic craft of an FO. By doing this weekly, we built strong, competent observers who could be trusted to be the subject matter experts in all things fire support.

Weekly Testing

Within the training plan, we incorporated weekly written tests, usually on the last day of the work week. These tests included the Recognition of Combat-Vehicles (ROC-V) Test, Master Question File (MQF) Test, and our Squadron Redbook 100-question Combat Knowledge Test which focused on 13F-related knowledge. The standard within our Platoon was each Soldier, from Private to First Lieutenant, must score 80% or above on each test. To add an incentive, we would release the highest-scoring Soldier, or Soldiers for the remainder of the day. These weekly tests produced knowledgeable and competent fire supporters who were technically proficient. Through this technical proficiency, our formation had a doctrinally sound foundation to provide lethal and accurate fire support to our maneuver counterparts.

Squadron Command & Control (C2)

Incorporating the lessons we learned from DR23 in January and those coming from Eastern Ukraine, our maneuver Squadron Commander (SCO) pushed us to have a dispersed and lean C2 element. We leveraged a robust communications architecture (enabled by ITN and Net Warrior devices) to communicate at range and to have key leaders in the right places to allow decisive decision-making. In execution, our TAC consisted of only two Stryker's, HQ-66 and HQ-63 (colloquially known as the 'Command Shack' and 'Kill Shack'). They were equipped with a strong communications package that acted as a mobile targeting cell, focusing on the in-depth detection and disruption of enemy formations, augmented to synchronize ISR, fires, and maneuver in the current fight. Within

the 'Command Shack,' the S3, AS3, and SCO would view the common operating picture (COP) and receive inputs from the Squadron and Regiment. In the 'Kill Shack' we had the Squadron FSO, the AFATDs Operator, AS2, and AS4. These personnel provided the FSO the ability to receive SIGACTs firsthand and allowed the AS4 to track ammunition expenditures for our mortars, expediting the resupply process of our mortars. The 'Kill Shack' had a strong communication capability. Our digital communication capabilities consisted of our AFATDs through the Mission-Partner Environments (MPE) and FM as an alternate. The FSO also had the TAK network, both through an ATAK end-user device (EUD) and Windows Team Awareness Kit (WIN-TAK), allowing access to a clear COP with position, location, and information (PLI) data and direct digital communications with other users. Our Main Command Post (MCP), aided by our Headquarters and Headquarters Troop (HHT) and Forward Support Troop (FST) Command Teams, focused on planning the next fight and sustaining the current one. The MCP contained our Assistant Squadron FSO and Squadron FSNCO, who would help the planning process and coordinate outside assets such as Army Attack Aviation and artillery.

Troop C2

Our Troop C2 capabilities were an attribute of our success at JMRC. At the Troop level, we would conduct a fires synchronization every day rehearsing the voice/digital kill chain with our FOs and our Troop mortars going off the Target List Worksheet (TLWS) for the upcoming day. This synchronization provided a COP for all elements within our Fires Enterprise and allowed us to identify problems before execution. These synchronizations also included version control. As with any operation, there would be updates to the TLWS from either the Squadron or Troop. To ensure all units were operating off the same products, the FSO would delete old data packages on the TAK network and ensure the data was current for all units.

We would create group chats on the ATAK to immediately share information with all key members of our Squadron/Troop Fires Enterprise (mortars, scouts, FSO/FSNCO, and FOs). This was a valuable tool to ensure a COP and functioned as another platform to synchronize fires across the Troop and Squadron. It is also important to ensure that all elements of the Fires Enterprise have an analog COP. Too often, digital systems can/will go down and it will thus force us to fight analog.

CLOSING

Through the tough lessons learned from DR23 in January, we transformed how we operated as a Fires Enterprise. We created a holistic and robust training plan that focused on individual competence and continued to add additional pieces of our fires apparatus. Through this training plan, we focused on FO competence, a strong communications architecture, and an overall supportive relationship with our maneuver counterparts. We identified specific shortcomings including our mortar processing times and lack of knowledge on the ITN equipment and thus tailored our approach to training to incorporate these flaws. We stayed adaptable to the ever-changing environment in which we were operating in. We placed heavy importance on rehearsals and ensured a shared sense of purpose within our Squadron Fires Enterprise. We took the most underperforming FIST in the Regiment and made it one of the best within seven months. In the words of Fires Fifty #3, "You can save your own life."

CPT Austin Overby commissioned after graduating from Texas A&M University in 2020 and is currently in the Captain's Career Course. During his time as a Field Artillery Officer, he has served as an M777 Platoon Leader, Platoon Fire Direction Officer, and Troop Fire Support Officer in the 2d Cavalry Regiment.

1LT Zachary Baxter commissioned after graduating from Syracuse University in 2021 and is currently an M777 Platoon Leader in the 2d Cavalry Regiment. During his time as a Field Artillery Officer, he has served as a Troop Fire Support Officer and a Squadron Fire Support Officer.

AI's New Frontier

How AI Agents Can Revolutionize

By: LTC Rich Farnell and Lt Col Kira Coffey

Throughout history, rapid changes in the geopolitical and military environment impacted decision-makers' ability to accomplish strategic or operational objectives. Being too slow to adapt to changing conditions can be catastrophic in a dynamic environment. History is rife with accounts of militaries paying steep prices in lost lives, battles, and even wars due to their failure to adapt. The United States' national security depends on planners' ability to account for this dynamism and expeditiously identify gaps, exploit opportunities, and keep pace to stay competitive in modern warfare.

The Department of Defense should aggressively begin experimenting with Agentic AI tools (a category of AI that can work through a series of tasks on its own to achieve an assigned, complex objective) in its Joint Operational Planning Process (JOPP) for two important reasons. First, Agentic AI has the potential to more quickly and comprehensively synthesize a broad scope of traditional and non-traditional planning factors than humans alone to help produce more thorough, objective courses of action (COA). Second, once a COA is selected, Agentic AI also has the potential to help rapidly publish downstream directives and orders, flattening communication and saving hundreds of man-hours in each planning cycle.

Agentic AI is a capability that could swiftly account for these changing battlespace conditions and help solve large-scale, complex problems independently. This differs from current popular large language models that are dependent on individual prompts to perform a sim-

ple, specific task. Creating multiple dilemmas for a near-peer adversary requires continuous integration of capabilities across all instruments of power and all domains, including the electromagnetic spectrum and the information environment. In the fourth industrial revolution, Agentic AI is a method of deploying multiple autonomy-based technologies working synergistically that can perceive its environment and define a course of action on its own to achieve a given goal. Using this technology with human planners can produce an accelerated multi-disciplinary thinking machine.

Imagine a planning cell with a multifaceted "agent" who could understand geopolitical trends, global dynamics, and national policies as it pertains to a conflict. It could also account for the limitations and constraints of a military in all operational domains through the survey of multiple data sets. This type of "think-spear," which could also minimize the influence of group-think, favor-chasing, and counter-productive biases, can generate new opportunities and avenues of approach for decision makers. Deputy Secretary of Defense Kathleen Hicks confirmed this notion during the unveiling of the Pentagon's 2023 Data, Analytics and Artificial Intelligence Strategy, stating that "from the standpoint of deterring and defending against aggression, AI-enabled systems can help accelerate the speed of commanders' decisions and improve their quality and accuracy." We offer here that Agentic AI is the new frontier 'AI enabler' the DOD should accelerate the adoption of to achieve these aims.

Alternatively, envision the United States – slow to adapt and hamstrung by its traditional planning processes – competing with an adversary equipped with this "think-spear" across the strategic, operational, and tactical levels. No amount of high technology in the hands of our warfighters can outfight an adversary who out-maneuvers us when they have better, more rapid information flow. The implications of contesting an adversary with this type of intelligence and decision space warrant strong consideration for Agentic AI in a parallel planning construct.

The Russia-Ukraine war has offered a glimpse of the value of AI in modern warfare and its impact on military operations and tactics. Earlier this year, Time reported that Palantir Technologies AI software was responsible for most of the targeting in Ukraine. Additionally, Palantir has imbedded a software engineer with each battalion, demonstrating the kind of experimentation that has accelerated the "most significant fundamental change in the character of war ever recorded in history," according to General Mark Milley, former Chairman of the Joint Chiefs of Staff. Indeed, Defense One reported that the Pentagon has also been integrating "AI and machine learning into its intelligence, surveillance, and reconnaissance operations, helping the Ukrainian military thwart some Russian attacks.[8] These nascent experimentations in AI on the battlefield foretell the urgent need for our nation's military to get ahead on decision-making processes, too.

Agentic AI in the Joint Operations

in War Planning: ize Military Decision-Making

Planning Process can provide information superiority at the speed of relevance. Following, we submit a few ways in which Agentic AI could serve as an effective mean to achieve ends:

1. Agentic AI, with superior multi-domain awareness, could make force posture recommendations to planners and create multiple dilemmas in a Multi-Domain Operations (MDO) construct due to its ability to consistently curate information on movements of joint and coalition units as well as the adversary.
2. Agentic AI can help distinguish priorities on the Joint Integrated Prioritized Target List (JIPTL) based on real-time conditions in the battlespace, including the adversary's capabilities, avenues of approach, risks, and opportunities.
3. Agentic AI can track and determine potential logistical shortfalls (e.g. fuel, supply, munitions) before they occur to ensure copacetic sustainment support to discrete forces across a vast theater.
4. Agentic AI can keep "know thy enemy" at the center of COA development. Red teaming is an element planners can quickly lose sight of as the stress of conflict naturally induces one to return to a comfortable known, our own way of fighting, without the enemy's vote.
5. Agentic AI can instantly synchronize guidance and intent

across the battlespace. Reducing the potential for fratricide and increasing tactical-level flexibility and lethality.

6. Finally, most fundamentally, planners can leverage AI to produce and disseminate all downstream orders that are born from the cyclical planning process, saving hundreds of man-hours every cycle on tedious, repetitive administrative inputs, permitting more warfighters to be redirected to the fight.

We acknowledge there is still much to learn about the risks of Agentic AI and its resilience in a contested communications environment. Theoretical discussions on ethics, security, and best practices should continue. Nonetheless, there are countries like China who are competitive in the AI race with a clear desire to achieve technological superiority. Future warfare will almost certainly be won first in the information domain.

Military leaders should accelerate experimentation and adoption of Agentic AI tools into joint operational planning processes. It is critical they should do so with an iterative mindset, working to mitigate risks as they arise (machine learning will be helpful in this regard), rather than waiting for a perfect product to implement. When on the precipice of a technological revolution, we must embrace the risk that comes with taking a giant leap. For it is, no doubt, a greater risk to national security to not be the first Great Power to harness this great power.

LTC Rich Farnell is a National Security Fellow at Harvard Kennedy School, who is researching Agentic AI Strategic Parallel Planning, he was also the commander of the 2nd Battalion, 18th Field Artillery Regiment, Fort Sill, Oklahoma. Previously, he served as a special assistant to the Vice Chief of Staff of the Army, the Pentagon. He also served as a brigade FSO, battalion S3, brigade XO, and MDTF(P) XO. He received multiple battery commands and served as an observer coach/trainer at the National Training Center, Fort Irwin, California. He is a graduate of MIT Seminar XXI, Massachusetts Institute of Technology, and has experience in data analytics.

Lt Col Kira Coffey is an Air Force National Defense Fellow and an International Security Program research fellow at Harvard Kennedy School's Belfer Center. Her research focuses on whole-of-nation coordination to effectively compete in Great Power Competition. Kira is combat mobility pilot with over 2,700 hours in the C-130J and KC-10. She was a DOD Olmsted Scholar in Guangzhou, China and subsequently served as the Aide-de-Camp to the Commander, US Indo-Pacific Command, directly supporting and advising him on regional security matters. Most recently, Kira commanded Pacific Air Force's sole tactical airlift squadron where she was responsible for the readiness and employment of 160 aircrew and over \$1 billion in aircraft assets.

Opinions, conclusions, and recommendations expressed or implied within are solely those of the authors and do not necessarily represent the views of the United States Army, the United States Air Force, the Department of Defense, or any other US government agency.

Dig Deep: Adaptations for M119A3 Howitzer Defilade Fighting Positions

By: CPT Flem Walker III

Our tireless effort to survive is what will keep our field artillery, and thus our infantry counterparts, fighting mercilessly en route to the objective. How we survive is a matter of the resources at our disposal and the context of the battlefield. This article serves to outline practical dimensions for M119A3 howitzer defilade positions constructed by Army combat engineer light equipment sections.

As artillerymen, we pride ourselves on mastery of shooting, moving, and communicating on both self-propelled and towed platforms. Contemporary operations illustrate a transition from maneuver to positional warfare characterized by incremental gains. The area of operations becomes stagnant, resulting in firing batteries reusing position areas for artillery (PAA) that have previously been occupied. Fighting positions dug to standard provide extremely adequate protection from blast and fragmentation effects, the predominant weapons effects from indirect fire. There may be prolonged periods in which the forward line of troops (FLOT) is

stagnant and position areas for artillery (PAA) must be occupied for extended periods of time to provide continued fire support. Our ability to maximize survivability with limited terrain resources by emplacing in defilade will prove necessary.

The Russo-Ukrainian War continues to provide valuable insights into large-scale combat operations and the horrific reality of war. Since the inception of the war in 2022, the U.S. has provided Ukraine 198 155mm howitzers and 72 105mm howitzers along with a plethora of rocket and mortar systems. NATO countries have gifted numerous howitzer platforms in addition to this. Ukrainian Armed Forces (UAF) work tirelessly to defend these critical yet limited assets on the battlefield. The number remaining on the battlefield is open to speculation, some sources estimating anywhere from 60–75%. From these same open sources we see, almost daily, howitzers are subjected to intense counterfire. The targeting efficacy of the counterbattery is difficult to ascertain but it is evident that there is a relentless effort to keep these

critical assets in the fight via cannibalization, fabrication, and modifications.

A lack of extensive training on howitzers gifted by allied nations coupled with inexperienced Soldiers and crews have led to high attrition rates. Loss of equipment has come primarily from counterbattery fire and terminal attack drones. The ability to routinely emplace and displace rapidly throughout the close area is a tactic that is not represented in either country's military doctrine, and has only recently been seen implemented in battery level operations in the most tenuous pockets of conflict like Avdiivka. Extremely limited maneuver, stalled counteroffensives, and a failure to exploit and consolidate gains has reduced the need for gun positions to rapidly move to maintain pace with the FLOT. As a result, much like we have seen from the reemerging trench warfare with the infantry, the preferred method of survivability has been digging in coupled with mesh, wire, and galvanized metal fencing placed overhead.

Utilizing dig assets to position improve firing points is not a tactic that is entirely unfamiliar to U.S. forces. ATP 3-37.34, Survivability Operations, has an entire subchapter dedicated to the matter which provides diagrams namely designed for fire base operations. ATP 3-09.50, The Field Artillery Cannon Battery, only briefly mentions the firebase and does not indicate ATP 3-37.34 for further reference. Throughout Vietnam, the fire base was commonly established to provide 6400mil fire support to combat patrols, and housed engineers permanently for continual position improvement. Over the previous two decades, howitzers were a cornerstone of combat outposts (COPs) in a similar fashion. Common fea-



79th Fires Brigade of the UAF fire a UK gifted L119 105mm howtizer near Marinka. (Photo: Reuters)

tures of these fire bases were revetments in the form of HESCO barriers, earth berms, sandbags, and designated areas for ammunition storage and protection. In large scale combat operations with peer-to-peer adversaries, the fire base is largely untenable. Modern military targeting capabilities render this concept a non-starter. Once again, one must not look much further than the Russo-Ukrainian war to reinforce this point. While the RAF's targeting process still leaves much to be desired, they have shown much growth over the past two years. Their targeting capability was recently put on display in May when they were able to identify a UAF S-300PS launcher site via electronic intelligence, cue the signature, and then attack with both cruise and ballistic missiles. Battle damage assessment was subsequently conducted and reported by an Orlan-30 reconnaissance unmanned aerial vehicle (UAV). This attack was prosecuted in the deep area, for one air defense system,

Table 3-5. Material thickness (in inches) required to protect against indirect-fire fragmentation and blast exploding 50 feet away (continued)

Material	Mortars 82 mm	Mortars 120 mm	Rockets 122 mm	HE Shells 122 mm	HE Shells 152 mm	Bombs 100 lb	Bombs 250 lb	Bombs 500 lb	Bombs 1,000 lb
Clay ¹	10	18	18	18	20	30	40	40	50
Gravel, small stones, soil	10	18	18	18	20	20	20	30	40
Sand ¹	8	16	16	16	18	30	30	40	40
Loose parapets of—									
Clay ¹	12	20	20	20	30	36	48	60	NR
Sand ¹	10	18	18	18	24	24	36	36	48
Snow									
Tamped	60	60	60	60	60	NR	NR	NR	NR
Unpacked	60	60	60	60	60	NR	NR	NR	NR

Note. ¹ Double the values if material is saturated.

Table 3-5 from ATP 3-37.34 provides recommended material thickness for protection from indirect fragmentation/blast.

using multiple nodes in the kill web. Given this information, the decision to place a battery plus of fire support systems in an open fire base for extended continuous operations is not one that should be taken lightly.

During a recent combined arms live fire exercise, 3-320FA "Red Knight" Rakkasans combined efforts with 21BEB "Solid" Rakkasans to replicate modern UAF gun pits. Employing a composite battery of three M119A3 howitzers and three M777 howitzers with support from one T5 Dozer and one Front End Loader, different methods of emplacement were practiced. The most recent editions of both unit's tactical standard operating procedures (TACSOP) had data that mostly resembled practice for fire base operations.

Authorized equipment within the combat engineer light equipment platoon military table of organization and

equipment provides two T5 Dozers as opposed to the one that was available in this instance. Our positions were built during favorable weather conditions with dry ground and zero precipitation on clay soil. To construct a fighting position to the standards listed below, it required the reduced capability T5 Dozer / Loader team three hours of uninterrupted work. Planning factors for section, platoon, and battery operations can be found further below.

The desired end state for the defilade positions was to provide adequate protection from indirect fire for both the howitzer, prime mover, ammunition, and crew members. Headquarters trucks, fire direction centers, and ammo movers were concealed in the wood line to the rear of the battery. We sought to build interior communication lines between firing positions to facilitate protected ammo transfers but lacked the equipment to accomplish this within the allotted timeline. This build did not account for 6400 mil operations as it was designed with a relatively linear battlefield in mind, but this build permits traverse of up to 400 mils left and right. Engineers afforded enough width in the gun positions for crews to store ammunition and section equipment safely within the defilade. Prior to breaking earth, the light equipment platoon from "Akuma" Company was provided the azimuth of



6th Section's constructed defilade position in progress. This position was built with adequate width, sub-optimal depth, and plenty of length. This version also had ramps constructed both forward and rear of the firing position as opposed to having a true berm forward of the tube.

fire for the howitzers and desired dimensions for length, width, and depth in the firing position. These measurements were derived from the M119A3 TM 9-1015-260-10 and adjusted to achieve name tape defilade for crew members. The desired design was for the prime mover (M1152A1 HMMWV) to reverse the howitzer into its firing position, with enough length for both the howitzer and truck to comfortably occupy on level ground. This style of construction permitted rapid displacement in the event it is required. The immediate area forward of the tube was built with a nearly vertical berm for protection that took minimum quadrant elevation into consideration. The remaining excess dirt, or "spillage", was used to fortify berms to the left and right flanks of the defilade position at a minimum of 20 inches for added degrees of protection.

All gun positions were built with varying dimensions to identify the most ideal conditions for crews, with the following output identified:

crews and leaders must consider upon occupation within these. The most obvious concern is the ability of the howitzer to conduct a degraded occupation due to the howitzer panoramic telescope being five feet below level ground. While we occupied digitally, occupation (TLABSPAP) procedures require supplementary aiming references. Our advance party requested the light equipment crew to build a berm for the M2A2 aiming circles to enable clear line of sight between the howitzer panel and the aiming references. Another solution to this is for gunnery sergeants to create individual end of orienting lines (EOLs) for each howitzer using aiming poles that may serve as an aiming reference in lieu of the lay circle and safety circle. This supplements as an aiming reference in the absence of a distance aiming point within reasonable distance of the PAA as well. Finally, the width dimensions afforded to our gun positions by the engineers allowed plenty of room for emplacement of the collimator as the primary aiming reference following displace-

point, in tandem with the depth of the firing position, may produce a significantly high XO's minimum quadrant elevation.

Although dig operations and occupation occurred during ideal weather conditions, they quickly deteriorated with continuous precipitation during a 96-hour occupation. The clay soil exacerbated the issue. Section chiefs and crews must be proactive in the final "P" of TLABSPAP: position improvement. The design of the firing position resembles a dike, which allows water to rapidly saturate the soil. This becomes a safety hazard, a health hazard, and can greatly reduce the speed at which routine crew drills are performed. Techniques for position improvement include but are not limited to preparation of ammo shelters, construction of runoff ditches, thatching of floors to increase traction, and usage of plywood or pallets to create flooring and walkways.

Overhead concealment is incredibly valuable, but much harder to accomplish. Overhead cover even more so. Howitzer sections are typically outfitted with ultra-light camouflage net systems (ULCANS) which offers concealment from direct visual observation, scatter ground motion target indicator (GMTI) radar beams and can dim thermal signatures of Soldiers under the net. To gain a better perspective of ourselves, we flew a Skydio commercial off the shelf (COTS) drone above our PAA. We were quickly able to spot ourselves due to the contrast from fresh moved earth. To rectify this, battery leaders must look to position improve the firing point by blending. The objective of the blending technique is to alter your appearance to become a part of the background. This applies to both optical, thermal, and radar systems. Characteristics to consider include enemy capabilities, terrain patterns in the occupied area, and the shape, texture, and color of your equipment. For the M119A3 howitzer position, the chief consideration is how to blend the net and displaced earth within the existing terrain. In our PAA, the unearthed

Constructed M119A3 Howitzer Fighting Position

Width	Depth	Length	Berms	Ramp
25 feet	5 feet	35 feet	20 inches (min.)	35 feet, 3:1 Grade

M119A3 Howitzer Dimensions

Width	Height (Folded/Unfolded)	Length (Firing)
5 feet, 10 inches	4 feet 6 inches / 7 feet 3 inches	20 feet, 9 inches

Build Times for M119A3 Howitzer Fighting Positions

Time estimates below are based off loam soil content with a team of 2x T5 Dozers. Sandy, rocky, and/or wet soil will increase build times and should be factored as a planning consideration.

SEC Day/Night	PLT Day/Night	BTRY Day/Night
1.5HR/3HR	3HR/6HR	6HR/12HR

These defilade gun positions are simply "a way", and while not suitable for every operation, will prove valid in the instance continuous movement within or between PAAs is not an option. If this method is pursued, there are several factors

ment from firing. Site to crest is accounted for in the dimensions listed above. The length of the firing position permits adequate space between the tube and the berm to the front. Despite this, other immediate crests that exist within your firing

clay stood in stark contrast to the green vegetation on the virgin earth and our woodland ULCANS net. To resolve this, crews can utilize combinations of water, earth, soap, and powder residue from excess charges to act as a concealer. Other options that implement gas, oil, and natural elements exist depending on the desired finish and materials available.

UAF howitzer crews have recently innovated on the battlefield using foraged mesh net or chain link fence to reinforce their camouflage nets. Screening and fencing can be ordered as Class IV construction material or procured at local hardware stores (chicken wire, welded wire fence, chain link). While ineffective against direct hits, they have proven a formidable defense against terminal attack drones such as the Orlan-10 drone which can be outfitted with payload. The fencing either entirely prevents detonation of the fuze or may place the payload

at such an angle it is rendered minimally effective. This reinforcement may also provide added protection from air burst indirect fire fuzes. Continuous adaptation of our existing fire base tactics, techniques, and procedures (TTPs) for howitzer fighting positions used in previous campaigns will be important for large scale combat operations. Stunted ground maneuver coupled with aggressive counterfire threats during the Russo-Ukrainian War has created the need for howitzer crews to remain survivable without moving frequently. The necessity of a sub-surface defilade howitzer position for field artillery operations

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Well, it really works.



2:31 PM · Jan 22, 2023

Open-source intelligence from X showing a failed detonation attempt from an unmanned terminal attack Orlan-10 drone at a UAF self-propelled howitzer position. The defilade position is protect overhead by a combination of camouflauge netting and a metal fencing supported by lumber.



5th Section's defilade position with adequate depth, width, and length. The position was constructed with the berm to the rear and ramp forward. Constant precipitation with the clay soil led to the section constructing flooring using ammo pallets and ammo boxes to gain traction.

is entirely dependent on the mission variables of the operation. While extremely valuable for survivability, the time and resources required may not permit the construction for an entire platoon or battery. Even in instances where the time and resources are available, the supported forces may advance so rapidly that frequent displacement is required, making the return on investment extremely low. When appropriate within the context of the mission, howitzer fight-

ing positions can prove indispensable to the protection of troops and assets. Leaders and crews must provide specific guidance to light engineer crews following RSOP, and continually position improve following dig operations. When issuing guidance, commanders must consider factors such as soil composition, weather forecast, aiming references, site to crest, flooring/thatching, and overhead cover and concealment. Position improvement must never stop. Our willingness to innovate and survive will mark the difference in our ability to support maneuver force opportunities to close with and defeat the enemy.

CPT Flem B. Walker III is a M119A3 Battery Commander, currently serving with the "Bonecrushers" of B/3-320FA, 3BCT, 101st Airborne Division. He commissioned from Auburn University in 2017 as a Field Artillery officer. Previous assignments include Company Fire Support Officer with B/2-69AR, 2ABCT, 3ID, M109A6 Platoon Leader with C/1-9FA, 2ABCT, 3ID, and HHB Executive Officer with HHB/1-9FA, 2ABCT, 3ID. Following assignment at 3ID, CPT Walker served as an Associate Professor of Military Science at Howard University with U.S. Army Cadet Command. Upon graduation of Captain's Career Course in Fort Sill, OK, CPT Walker served as an Assistant Brigade Fire Support Officer for the "Rakkasans" of the 101st ABN DIV (AASLT) and as a Battalion Fire Support Officer for "White Currahee" 2-506IN, 3BCT, 101st ABN DIV (AASLT). He assumed command of "Bonecrusher" Battery in March of 2024.

Radically Rethinking The Field Artillery

By: Gen. Michael Combest, U.S. Army, Retired

The era of Great Power competition and confrontation has returned. The United States and its Western friends and allies face an increasingly hostile and assertive alliance of The People's Republic of China, Russia, Iran, North Korea, and their surrogates. The danger of direct military confrontation with these belligerent forces is significant and growing.

To protect America and American interests in this dangerous era, the U.S. military must be capable of decisively defeating modern, well resourced, very capable adversaries. Equally important, the U.S. military must be seen by likely enemies to be capable of decisively defeating any adversary, thereby deterring aggression and preventing war.

To be judged capable of defeating armed aggression, U.S. military forces must demonstrate an ability to apply military power around the globe in ways that adversaries can neither match nor endure. To do this, the U.S. force must transform. It must transform what it fights with, how it fights, and how it organizes to fight. A key part of this transformation will be using newly proven and still emerging technologies in ways that generate orders of magnitude more combat power than does today's force.

An essential part of this transformation must be making the nation's Army much more lethal, sustainable, and rapidly deployable than it is today. A key to achieving that objective is to make fundamental changes to the Army's principal source of lethal combat power—the

Field Artillery—and radically rethink its role in land combat.

Radically Rethinking Field Artillery in Modern Combat

U.S. land combat is predominately executed by Combined Arms Teams which combine infantry, armor, artillery, and aviation elements to accomplish specific missions. These teams "Fire and Maneuver" to win tactical engagements and battles large and small; i.e., they maneuver to deliver lethal fire against enemy forces, and they deliver lethal fires to create opportunities to maneuver.

This "Fire and Maneuver" construct is the foundation of U.S. ground combat. The number and nature of "Fire and Maneuver" options available to Combined Arms Teams are largely determined by how precise and accurate or imprecise and inaccurate the team's Field Artillery fire is—and conventional Field Artillery is woefully imprecise.

The mainstay of U.S. Field Artillery is cannon fire which mainly consists of exploding 155-millimeter projectiles. Fired at maximum ranges, conventional cannon artillery has a Circular Error Probable (CEP) of more than 250 meters. As shown in Figure 1, CEP is the distance from a target at which 50% of fired rounds will land beyond, and 50% will land inside of the intended target.

This CEP of 250 meters is five times the 50-meter kill radius of standard U.S. 155 mm projectiles. In practical terms, this means that every conventional round fired has a greater than 50% chance of landing too far from its target to kill or damage it. In fact, only 25% of rounds fired will land within 100 meters of a targeted aim point; fewer still will land within 50 meters—about 12.5%.

This lack of precision is not due to human error. It simply reflects inaccuracies inherent in shooting unguided projectiles 20-plus

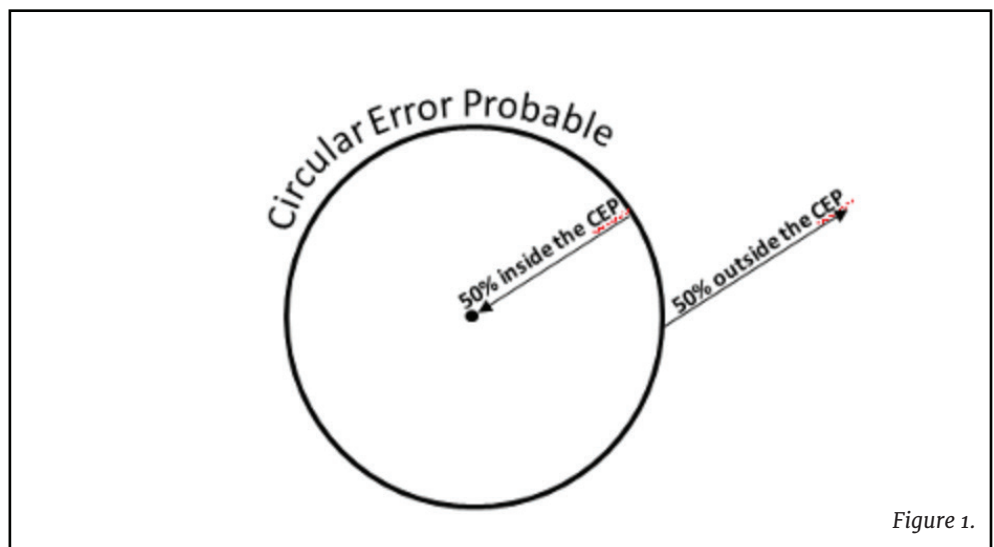


Figure 1.

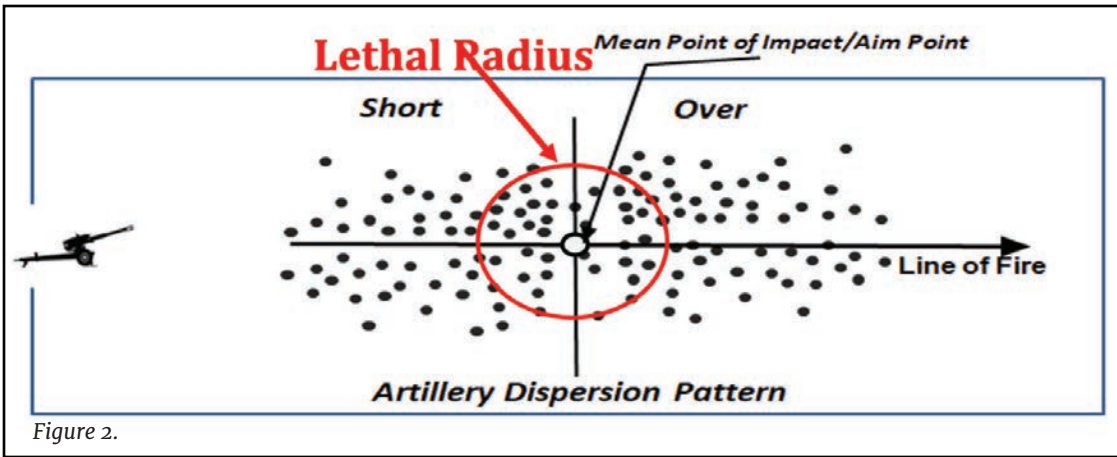


Figure 2.

miles through constantly changing weather conditions into varying terrain--from weapons systems whose performance characteristics change with every round fired. Simply put, the standard Field Artillery system used today is too inaccurate to rapidly deliver the precise, deadly fires that modern ground combat requires.

Figure 2 shows a standard dispersion pattern for cannon artillery. As seen, a small minority of rounds impact close to the target, with only about 12.5% of rounds landing close enough to seriously damage or destroy the target being engaged.

Field Artillery in Modern Combat

Despite its inherent imprecision and large dispersion patterns, history teaches, and modern conflicts confirm that Field Artillery is very often the decisive element in ground combat at all levels of war. In the ongoing Russia-Ukraine war, Field Artillery fires routinely decide the outcome of small unit engagements, large scale tactical fights, operational level battles, and strategic outcomes.

Russia-Ukraine also confirms that conventional cannon fires are rarely rapid and accurate enough to decide fights quickly. Instead, reliance on conventional cannon artillery to decide engagements and battles is a recipe for battlefield stalemate and for sliding into wars of attrition and exhaustion. These are exactly the types of wars the United States seeks to avoid.

The Army's Transformation Mandate

For a decade, Army leadership has mandated that transforming how the Army fights is an urgent, non-negotiable priority. But the Army hasn't met this mandate. While there have been significant technological innovations, a review of the most recent doctrinal publications shows that the Army operates essentially the same way it did 40 years ago. It organizes in roughly the same way and employs the nearly same operational doctrine. Most technical advances have been applied onto longstanding structures and tactics. And as Theodore Tropp and others note, militaries that simply insert new technologies onto existing force structures and doctrines do worse than fail to capitalize on the battlefield potential these new technologies promise. They actually diminish the operational dexterity and power of the formations using them.

One enterprise the Army can undertake immediately to achieve its mandated transformation is radi-

cally rearm, reorganize, and redoctrinate the Field Artillery, especially cannon artillery.

Precise Cannon Artillery

The U.S. Army has already developed and fielded artillery weaponry that can dramatically improve the speed and power with which Combined Arms Teams

engage enemy forces, and help achieve the transformational advantages required to prevail in 21st Century warfare.

Two examples of this weaponry are the M982 Excalibur artillery round and the M1156 Precision Guidance Kit (PGK). These two developments eliminate cannon artillery's imprecision/dispersion problems.

Fired at its maximum range of 22 miles, the Excalibur has a CEP of 4 meters and has a greater than 95% probability of detonating within 10 meters of a designated target. Artillery rounds fitted with the PGK and fired at maximum range of 20 miles have a CEP of 50 meters. The battlefield consequences of this improvement in accuracy are potentially revolutionary. A Combined Arms Team that uses Excalibur ammunition can bring accurate, deadly fires to bear at unprecedented speed with unprecedented combat efficiency.

Consider, for example, an attack against an enemy platoon of about 30 soldiers. Figure 3 illustrates:

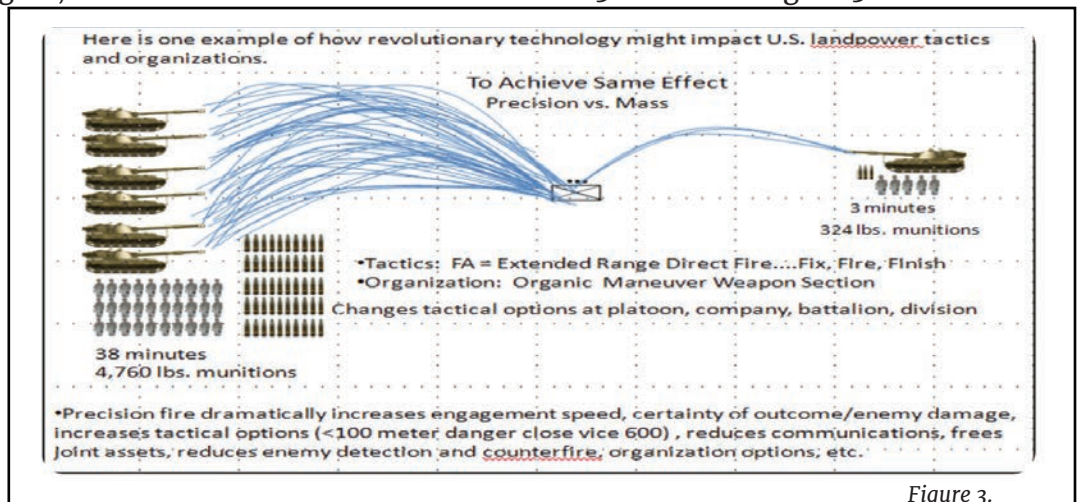


Figure 3.

Using conventional artillery ammunition, a Field Artillery unit would need to fire 43 rounds (4,800 lbs.) of ammunition to have a 57% probability of destroying an enemy platoon. The engagement would take about 30 minutes and require at least 6 howitzers and 34 soldiers. Firing Excalibur, that same artillery unit would have a 95% probability of destroying that platoon by firing just 3 rounds (324 lbs.) from one gun, requiring 5 soldiers.

The operational and logistical impacts of this improved capability can be enormous. Operational impacts will most likely be realized in terms of increased operating speed and the enemy's morale destruction. A unit that can threaten an enemy's destruction 10-fold faster than is currently possible gains decisive physical and psychological advantages over that enemy.

"Speed Kills" is an adage that speaks to the decisive impact of being able to repeatedly start and complete a tactical cycle or multiple tactical cycles faster than one's enemy. Being able to constantly outpace one's enemy with deadly fires and disorienting maneuver generates a battlefield confusion that leads to cascading degradation of the enemy's ability to fight. All our likely adversaries speak to the decisive advantages that superior battlefield speed generates. For example, China's new operational doctrine declares that war is a contest of "speed (and)... combat efficiency." Precision artillery ammunition creates an ability to generate operating speed and battlefield agility that current indications show China's People's Liberation Army and other modern forces will almost certainly be unable to match.

The logistical impact of precision artillery is equally important. In Figure 3's platoon scenario, the U.S. Combined Arms Team destroyed an enemy unit using only 7% of the amount of conventional artillery required. Furthermore, the enemy's destruction required only 16% of the number of howitzers, 15% of the soldiers, etc.

At the small tactical level, this battlefield "savings" is locally important. At the operational and strategic levels, it will likely be decisive. It's a near certainty that U.S. ground combat operations will be expeditionary in nature and take place on foreign shores. Thus, every instrument of war and soldier required to prosecute an overseas fight must be transported into the theater. This creates SLOC (Sea Lines of Communications) vulnerabilities, port vulnerabilities, Ammunition Depot vulnerabilities, Main Supply Route vulnerabilities on land, etc. Every tool that helps reduce logistics vulnerabilities that must exist throughout a theater of war can be decisive in increasing theater and national strategic force options.

Data from the Russia-Ukraine war illustrate these points. Thus far, both sides of the conflict fired—and continue to fire—incredible amounts of cannon artillery. Russia has fired 20 million artillery rounds while Ukraine has fired over 10 million. In tonnage, that's 1.25 million tons of artillery for the Russians and 620,000 tons for the Ukrainians.

But that's only a part of the logistics bill that relying on conventional artillery creates. Artillery tubes wear out and must be replaced at a fairly rapid rate. Cannon tubes last about 2,500 rounds. This means that in 2½ years Russia has had to replace about 10,000 artillery tubes and Ukraine 5,000. These are just parts of a logistics burden imposed by the requirement to field, sustain, and maintain Field Artillery systems that consume 3,000,000 rounds per year and more.

The logistics burden of relying on, but being unable to produce sufficient conventional artillery ammunition has translated into several periods of operational paralysis.

The Operational Penalty of Imprecision

Consuming colossal amounts of artillery ammunition has substantially dictated the tactical, operational, and strategic pace and nature of the

Russia-Ukraine war.

Forces which rely on massed artillery fires operate only as fast as their ability to position howitzers, establish local ammunition distribution points, and position ammunition haulers and other support. At the tactical level, this imposes a slow and deliberate pace which creates multiple opportunities to disrupt preparation and execution.

At operational levels, where major battles and campaigns are conducted, the requirement to position large ammunition stockpiles has severely limited both sides' ability to shift rapidly from defense to offense or exploit breakthroughs or other opportunities. Feeding their insatiable demand for artillery ammunition has cost both Russia and Ukraine major opportunities.

Strategically, options have been severely restricted by an inability to replenish artillery ammunition stocks. Russia purchases from North Korea, China, etc. Ukraine's ability to stay in the fight and wage a defense is determined by their ability or inability to persuade supporters and allies to meet Ukraine's almost bottomless demand for artillery ammunition.

At key junctures Russia and Ukraine both became partially paralyzed by artillery ammunition shortages. And rather than exploiting narrow windows of opportunity to attack and finish an exhausted opponent, they were forced to resort to defensive stalls while awaiting replenishment.

As already noted, switching from conventional "dumb" artillery rounds to precision ones creates opportunities to reduce all of these ammunition driven drags by orders of magnitude.

Reorganizing and Redoctrining

To fully capitalize on precision artillery's revolutionary potential, the U.S. Army should begin experimenting with dramatic changes to its organizational structure. For

example, it's entirely reasonable to explore eliminating Field Artillery as a separate Army branch—especially cannon artillery.

If a single howitzer with a crew of 5 firing precision ammunition can deliver more destructive power than an entire howitzer battery of 6 guns, the need for the howitzer unit is probably outdated. The ideal would be to make a cannon an organic part of an Infantry or Armor battalion. This would be similar to battalion and company level mortars which are organic components of Infantry and Armor units.

The logic continues that if Field Artillery company sized units (batteries) are obsolete, there is likely no need for their parent battalions. If individual cannons can fire at unprecedented speed with unprecedented precision, and generate unprecedented destruction, while maintaining unprecedented levels of safety for friendly forces near a targeted area, it is entirely reasonable to contend that the demanding staff work required to integrate artillery fires into a scheme of "Fire and Maneuver" is no longer required. Advances in Information Processing have given company level units the ability to manage information loads that previously required full Fire Support Coordination staffs, and the Army should explore capitalizing on that development.

Transferring cannon artillery's combat capability to Infantry and Armor units is consistent with the Army's futures concepts which advocate that to the maximum extent feasible, required combat assets should be integral elements of the formations most likely to employ them.

Eliminating cannon artillery as a separate Army branch may very likely offer great opportunity to divert monies and other resources that are now spent maintaining what increasingly appears to be an obsolete organizational structure. Twenty-five thousand to 35,000 soldier slots might be transferrable

to other combat arms branches. Likewise, the funds spent to acquire cannon battalions could be diverted to efforts that would accelerate and broaden the Army's required transformation.

The Problem with Precision Artillery

Skeptics will rightly claim that precision munitions like Excalibur require communicating with a GPS constellation, and that communication links are fragile and susceptible to disruption. They are correct. In fact, the Ukrainian Army has essentially stopped using Excalibur rounds because their kill rate fell to a low of 10% due to Russian GPS jamming and other measures. But that does not mean that precision artillery is perpetually doomed.

It is the nature of war that every new system and operating method will be forcefully countered—especially if they prove successful. It is also the nature of war that every counter can be counteracted—especially if the value of the operating system or method is of high value. Precision artillery is that high value system. In fact, the U.S. and others are developing and beginning to field counter-counter measures that will enable Excalibur and PGK to operate as designed and required. Measure, Countermeasure, Counter-Countermeasure are normal unavoidable steps in fielding and exploiting new technologies. Effective Russian countering of Excalibur and other precision rounds is temporary, and definitely not disqualifying.

Furthermore, every military asset brings vulnerabilities to a fight. In the case of conventional artillery ammunition, the vulnerability is tied to the requirement to produce, transport, store, position, reposition, and secure tens of thousands of tons of explosive, very dangerous ammunition.

Skeptics will also rightly contend that Excalibur rounds are incredibly expensive compared to conventional ammunition. Again, they

are right. Excalibur currently costs about \$100,000 per shell. Conventional ammunition costs around \$3,000 per shell. But these cost differences don't accurately reflect the cost of killing an enemy soldier or destroying their equipment. Taking into account the full system cost of destroying an enemy asset, the conventional shell cost soars to over \$350,000 per enemy platoon or communications van or radar, etc. The full system cost to destroy those same assets with precision ammunition is roughly the same.

Bottom Line

The United States Army stands at a crossroad. It has a clear requirement and directed mandate to transform the way it fights. Meeting that mandate cannot be accomplished by inserting new technologies into existing organizations and operating doctrines. To capitalize on the extraordinary potential offered by new weapons and support systems, the Army must explore dramatic, even radical changes to how it fights and how it organizes to fight. It should begin with radically rethinking the Field Artillery.

Mike Combest is a retired U.S. soldier—and Field Artilleryman. He served on active duty for 32 years, with assignments to every type of cannon artillery unit the Army had. While on active duty, Mr. Combest served at every tactical unit level from Platoon to Field Army; his staff assignments ranged from battalion level to Headquarters NATO and Department of the Army. Mr. Combest has been assigned and deployed as an artilleryman to every continent minus Antarctica. His military education includes the United States Military Academy, U.S. Army Command and General Staff College, School of Advanced Military Studies, and the U.S. Army War College. He and his family currently reside in North Carolina.

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The University of Illinois Army ROTC Program Rolls out a New Salute Howitzer

By: COL (R) Eric Ashworth



There is something about the field artillery that just makes a celebration better. On Saturday, September 14, 2024, the Cadets of the Fighting Illini Army ROTC Program experienced this first hand as they welcomed the newest member to their game day support to the University of Illinois football team. On that day, the cadets rolled out their new M101 howitzer to celebrate home team scores.

The howitzer was a gift from Sierra Army Depot in California and after receiving funding to transport the gun to Champaign, Illinois, the ca-

dets cleaned and painted the gun for the upcoming game. Thanks to the Engineering Department that fabricated a firing mechanism and Mr. Waylon Perry, from J&M Displays, who provide the pyrotechnic charges, the cadets were able to support the Fighting Illini football team as they won the game against Central Michigan University.

Other Army ROTC programs have howitzers that support their teams and at one time, the Fighting Illini had a howitzer as well. However, this howitzer disappeared some-time in the past so the new arrival was a welcomed sight. The M101 is a World War II vintage howitzer and although retired long ago from the U.S. Army for more modern field guns, it makes a great salute cannon today. Cadets who serve as members of the "Push-Up Crew" do push-ups every time the team scores. Not

surprisingly the crew has increased in numbers as they now man the howitzer as well. So the field artillery branch is present now at



Memorial Stadium and the sound of freedom now resonates whenever the University of Illinois team scores a touchdown.

Colonel Ashworth commanded the 2-18 FA Battalion (MLRS) from 2000-2002 and served in numerous command and staff positions in the Field Artillery Branch of the U.S. Army from 1982-2012. He is now an Assistant Professor of Military Science and the Scholarships and Enrollment Officer for the University of Illinois Army ROTC Department.

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USFAA

United States Field Artillery Association

P.O. Box 33027, Fort Sill, OK 73503
580.355.4677



Virtual Fitness Challenge

2024-2025

MEXICAN - AMERICAN WAR

Join us for the 5th Annual King of Battle Virtual Fitness Challenge as we follow the Mexican-American War from Vera Cruz to Mexico City and the signing of the Treaty of Guadalupe Hidalgo.

The event will go live November 17, 2024. The My Virtual Mission fitness app links with your cell phone, smart watch or fitness tracker so that all steps are counted towards the total. Finish before November 16, 2025 and receive the custom race medal pictured above!



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