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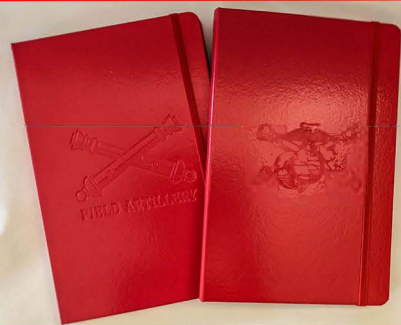


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FA Journal

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Sharon G. McBride

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BG Stephen Smith
U.S. Army Field Artillery
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Greetings from the land of Block House Signal Mountain!

As we enter the season of Saint Barbara, we celebrate a shared history and legacy, leaders should view it as an opportunity to reinforce the Army Profession, helping our junior leaders understand what it means to be a Professional in the Field Artillery and teach them the value of our history and traditions. In honoring Saint Barbara, we remember her as one whose strength of character and commitment to her values is an example for us all to emulate. Be proud of our tradition of excellence and each Soldier's role in the Field Artillery community.

On this note of excellence and tradition, we have much to remain excited about in our branch going forward:

- We remain the #1 Force Mod effort. Our Long Range Precision Fires Cross-Functional Team of professionals led by BG Rafferty is truly leading the way for our Army's modernization efforts.
- We continue to receive overwhelming support for additional growth in our FA formations.

- Our capstone doctrine (FM 3-09) is in its final stages of revision. This doctrine is LSGCO focused and will drive our FS and FA training, education, and leader development for years to come. We appreciate all of the feedback as our talented doctrine writers collaborated with the field over the last 10 months.
- We have the most experienced group of practitioners of Fire Support and Field Artillery in LSGCO in over 15 years due to the continuous Decisive Action based WFXs and CTC rotations, and deployments across the globe since 2014.
- The Field Artillery bulletin will be distributed hard copy to units again early next year, and the U.S. Field Artillery Association has brought back the Field Artillery Journal.
- Our dedicated NCOs and Officers instructing in AIT, the NCOA, and in BOLC-B, WOBC, WOAC, and CCC have instilled physical and academic rigor across the board. Graduates of these schools are fully prepared to seamlessly transition into their units at the appropriate skill levels. Your continued feedback is valued.

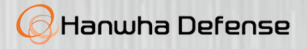
We must consolidate our gains and exploit our recent successes. This includes continued intellectual debate, the competition of ideas, and sharing of lessons learned. Please continue dialogue with FSOK on all levels, provide feedback, and keep submitting your fantastic articles for publication in the new FA Bulletin and the FA Journal!

May Saint Barbara watch over each of you and all our Redlegs around the globe!





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IN THE OPENING DAYS OF WAR, LET THE ARMY LEAD ON TARGETING

By Mike Jacobson

On an early fall morning in 2028, a confrontation between Russia and Lithuania escalates. Russian air assault forces land and attack Lithuanian forces at Siauliai Air Base. Meanwhile, Russian Spetsnaz Forces assault the headquarters of the Lithuanian air force and the Airspace Surveillance and Control Command at Kaunas, effectively blinding the country's air formations and disabling its ability to command or control. Within the hour, elements of Russia's 1st Guards Tank Army and the 20th Guards Army, which had been exercising in next-door Belarus, roll across the border into southern Lithuania under the umbrella of Russian aircraft and heavy rocket barrages. By noon, Moscow has achieved most of its military objectives in southern Lithuania. "Popular" uprisings in favor of reunification with Russia careen out of control in the capital as Russian forces from the exclave of Kaliningrad link up with their comrades. The North Atlantic Council declares the Russian invasion illegal, invokes Article 5 of the Washington Treaty, and authorizes alliance forces to launch a military response.

Russian forces quickly consolidated their military gains in Lithuania, assimilating with existing integrated air defense systems in Kaliningrad and western Russia. Russian missiles and electronic warfare render NATO member air- and sea-ports of debarkation in northern and western Europe inaccessible. Russian cyber operators activate pre-deployed weapons in NATO networks. Russian air defense systems push NATO airborne surveillance systems, including the F-35, outside their effective ranges. The Kremlin's plan to deny its adversary physical or virtual access to Lithuania is complete. NATO forces are presented with a challenge: Can Lithuania be saved?

In this worst-case vignette, Russia effectively neutralizes NATO air support, leaving the U.S. Army as the only force capable of penetrating successfully, with the task of eroding Russian air defense capabilities and defeating long-range surface fires. Russia has the means — via integrated air defenses and long-range interdictory fires — and the intent — which we may soon see in new doctrine — to defend itself and consolidate military gains on NATO's eastern flank. Unfortunately, the U.S. Army doesn't have the long-range weapons, formations, doctrine, or expertise to attack and penetrate Russian air defenses as part of a joint force.

This is a problem the institutional Army has been thinking about for a few years and believes it has a solution for, as evidenced by last year's pamphlet from U.S. Army Training and Doctrine Command, "The U.S. Army in Multi-Domain Operations, 2028." This document represents a recognition that air support will not necessarily be available, as previously assumed, in the opening days of conflict, thereby requiring the Army to attack strategically important targets at the outset of a conflict. However, Army and joint doctrine for planning, coordinating, and synchronizing targeting have not yet caught up to this reality.

Current joint doctrine relegates to the Army the mere nomination of critical targets to the joint force commander's staff, which then develops a prioritized joint target list. This contrasts with the Air Force, which is given the task of controlling and managing the targeting cycle and processing the nominations from the Army and elsewhere for inclusion on the joint target list. In the opening days of a war, this arrangement will hinder the Army's ability to take the lead in strategic targeting and employ its new long-range artillery. Despite the

concerns raised by MG (ret.) Robert Scales in his recent article, the Army concept of multi-domain operations is primarily defensive in nature. It aims to force an adversary to cease its offensive before presenting the United States and its allies with a fait accompli involving the seizure of territory, thereby coercing the adversary back to competition below the threshold of war and negotiations. This vision is the latest iteration of a concept that would see the U.S. armed services challenge the enemy simultaneously from the air, land, space, cyberspace, electro-magnetic, and even maritime domains against the enemy's center of gravity to seize the initiative.

For the Army to be prepared to penetrate Russian air defense and long-range artillery systems, it will need to experiment and develop new approaches along with the other services to address how they all work together to organize, plan, and synchronize the destruction of critical targets beyond the operational areas traditionally assigned to the Army. In the event of a war, Russian operations will leave the U.S. military few conventional options besides long-range strikes with Army artillery against targets that are deep behind the frontline — areas traditionally in the Air Force's wheelhouse. This is simply because Russian stand-off defenses will make penetration by manned aircraft too costly while holding air- and sea-ports of debarkation at risk with long-range surface fires. Long-range strikes are a new task for the Army, which has not had to attack deep targets outside of its area of operations since the end of the Cold War.

Army and joint doctrine recognize the need for a new approach to long-range interdiction of high-payoff targets during what are called "early-entry operations." To accomplish this task, the Army needs to develop new skills, organizations, systems, and doctrine to identify, develop, nominate, plan, and execute attacks against high-payoff targets deep in the enemy's stand-off area. As the Army does this, joint concept developers should review joint doctrine and conduct experiments on strategic and operational targeting to allow the Army and other services to converge capabilities in an integrated manner. This is the clearest path toward ensuring NATO is able to deter, and if need be face down, Russian forces in the event of a scenario like the one described above.

Multi-Domain Operations and Army Artillery

The new Army concept of multi-domain operations is

a reaction to a new reality: a constant state of competition that could dangerously and quickly escalate into armed conflict to block a fait accompli by Russia or China. This is a different approach for the Army because it tries to resolve the challenge of the "gray zone", while eliminating phased operations in joint doctrine, and gives the Army new responsibilities, such as long-range strike. The Army concept identifies five problems for the armed services to solve. Of the five, two expressly concern how the Army contributes to dismantling and rolling back an enemy's anti-access/area denial capabilities.

The Army is on track to field numerous long-range artillery systems in the mid-2020s to provide materiel solutions to these two problems. The bigger question for the Army does not concern materiel, however. The Army not only needs to rebuild its own competence in planning and coordinating long-range strikes, a difficult undertaking, but also work to change joint doctrine currently limiting its role in planning and coordinating those strikes. In order to be prepared for a war with a great-power adversary, the Army should also relearn how to suppress and destroy enemy air defenses at extremely long ranges. Whether commanders will recognize and exploit the Army's new competence remains an open question, as current joint doctrine does not acknowledge the outsized role that Army artillery will play in the opening days of such a conflict.

Where Army Multi-Domain Operations End and Joint Doctrine Begins

The Army faces a bevy of challenges to carrying out the long-range strike mission. As described in the multi-domain operations concept, the Army currently lacks long-range surface-to-surface artillery with sufficient range and survivability. It lacks doctrine to enable targeting beyond the traditional operating areas for land forces, so soldiers cannot take advantage of key intelligence assets for targeting. The Army does not have organizations at the combatant command and joint task force levels capable of planning and executing theater-wide interdiction. The Army does not have personnel with relevant training and experience to man those organizations, should they be established. Given these deficiencies, the Army should leverage joint and national intelligence, surveillance, and reconnaissance systems to contribute to the targeting cycle for long-range fire support. To its credit, the

service has already made significant investments in the development of long-range artillery and experimented with new formations and concepts in this area. Yet the Army — and the other services — are just beginning to fully address the significant implications of this impending sea-change in joint doctrine through thorough and rigorous experimentation and concept development.

Joint doctrine prescribes theater fire support roles, processes, and responsibilities through what is called the “theater air ground system” — a system of systems for the planning and execution of all air-ground operations. The system is intended to create integrated command and control for the entire U.S. military. Individual components identify requirements, nominate targets, and conduct execution planning. After the joint force commander makes targeting and apportionment decisions, components plan and execute assigned missions through their respective operations centers in the form of air tasking orders, fire support plans, intelligence collection plans, and space plans, as well as planning requirements for cyber operations, electronic warfare, and special operations. However, joint doctrine acknowledges that many formations in the U.S. military cannot even enter an area of operations until ground forces have secured the area — the area denial problem described in the Army’s multi-domain operations concept.

Current joint doctrine designates the air component commander as the supported commander for the overall target interdiction effort, as well as the airspace control authority. As a result, the joint air operations center serves as the brain of the overall theater air ground system. The Army coordinates with the operations center through a battlefield coordination detachment, which nominates targets for the overall target list, processes land force requests for air support, and advises the air component commander on land operations. The joint force commander may also appoint the senior artillery commander as the Joint Fires Element to serve as the joint force fires support coordinator and oversee the overall fires operations and the production of the joint integrated prioritized target list. While this process places an Army fires leader in charge, the Air Force still controls the targeting process itself.

To explore how to expand its role in the conduct of long-range interdiction, the Army has conducted

numerous experiments with new formations and headquarters at its highest echelons. In addition, the Army is using the 17th Field Artillery Brigade as the test bed for a wholly new organization referred to as the multi-domain task force, which will serve a unique role in effects integration planning and execution at the operational level for the joint force commander. The experiment has yielded a great deal of understanding about how to employ intelligence, cyber, electronic warfare, space, and fire support, but the Army has yet to directly address the problem of long-range targeting. Part of the reason for this may stem from using the Indo-Pacific area as the primary location for this particular experiment, since the particular long-range fire support shortfall is much different in the Pacific than in Europe. Consequently, the focus of the multi-domain task force has been more on enabling maritime tactical maneuver than on joint long-range targeting and penetration.

In light of this early exploration of the problem, the Army has created some initial design concepts to add new fire support commands to its existing structure. In some cases, these initial designs represent truly disruptive approaches to joint operations. For instance, the Theater Fires Command concept document states, “the role of the Theater Fires Command is planning and synchronizing theater fires,” but it does not address how this new concept may affect the other services and joint processes that already exist to synchronize theater fires. Many of the Army’s new organizational designs may seem to ignore existing joint doctrine on targeting, particularly on joint procedures for attacking high pay-off targets and time-sensitive targets, the two types of targets that comprise adversary air defense and long-range artillery systems. However, much of this “ignoring” of existing targeting processes is not a lack of acknowledgement but an indication of the Army’s ongoing collaboration with the Air Force, joint staff, and other services on new concepts and technologies. For example the employment of artificial intelligence in attacking dynamic targets or the development of a new joint all-domain command and control system.

Too often, in its effort to develop concepts for long-range artillery, the Army has thought of the problem in traditional “kill chain” terms associated with how it conducts fire support for its own ground units. For example, the Army might describe a typical

tactical fire-support vignette in which a high payoff target is unexpectedly observed in the enemy's deep support areas. The target may be fleeting — meaning it might soon move — and therefore should be engaged rapidly. Further, the target may not have been planned as part of the current air tasking order or fire support plan. What's the problem? This scenario and others like it are barren of planning considerations for convergence across domains and the broader implications of hitting targets haphazardly. Hitting high pay-off targets across the broader area of operations will require persistent coordination and synchronization of the entire U.S. military. The danger in omitting processes and associated capabilities, such as the joint targeting cycle and satellite surveillance, in its thinking may reveal an oversimplification of solutions. This could lead to costly misunderstandings such as the belief that the Army needs to field its own strategic intelligence, surveillance, and reconnaissance systems. Rather than creating its own targeting capabilities from scratch, the Army would do better to learn to leverage and manage systems and processes that already exist. Let's start with the most critical: the joint targeting cycle.

The joint targeting cycle is the process of selecting and prioritizing component critical targets and matching the appropriate military response, taking into account command objectives, operational requirements, and capabilities. There are two targeting categories: deliberate and dynamic. Each component nominates individual targets, categories of targets, or desired effects. The deliberately planned targets are prioritized and approved in the joint targeting list. In some cases, the commander may also make available specific assets for operational area-wide employment including nonlethal assets designed to enable or disable materiel, personnel, and networks. Dynamic targeting has often been called “find, fix, track, target, engage, assess” — or the “kill chain” — and has also been used for engaging high-payoff targets, such as mobile air-defense systems, radars, and command and control nodes. Its applicability, however, extends to all targets whether developed during deliberate targeting or dynamic targeting. Targets of opportunity have been the traditional focus of dynamic targeting because decisions on whether and how to engage must be made quickly. While planned targets can also be dynamic targets, the steps simply confirm, verify,

and validate previous decisions (in some cases requiring changes or cancellation). The steps of dynamic targeting may be accomplished iteratively and in parallel. The find-fix-track-assess steps tend to be surveillance-intensive, while the target-engage steps are typically labor-, force-, and decision-intensive.

To solve the problems of penetration and disintegration, the Army's kill-chain for targets at long-range shouldn't be thought of in the same terms as in the tactical and operational areas. In the tactical and operational areas, an observer using precision targeting sensors quickly determines a very accurate target location and then uses tactical communication equipment to quickly send a digital call for fire to the fire direction center, which quickly calculates and transmits firing data to a firing platform. The observer is able to see the effects of the munition on the target and can then provide feedback about damage to the target, whether it has been destroyed, neutralized, or suppressed, or whether the target needs to be engaged again. This type of tactical surface-to-surface fires engagement is expertly practiced by the Army in the tactical and operational areas. However, the execution of the Army “kill chain” for targets at strategic range require the Army to plan fire support in much the same way as the Air Force does in the air tasking order. That is, in the framework of the theater air ground system, joint targeting coordination board, and joint targeting cycle.

Let the Army Lead the Targeting Cycle.

Current doctrine and the theater air ground system assign target and strike coordination to the Air Force, with the other services playing a supporting role. When adversary air defenses deny air support, the U.S. military might find that a converse relationship is desirable in which the Army has specific assets made available to it in order to solve the penetration and disintegration problems. In this conception, the Army would possess primary access to joint and national intelligence collection assets to identify high-payoff targets and prioritize the suppression and destruction of enemy air defenses and long-range artillery. The Army should be given authority to fully develop high-payoff and time-sensitive targets in the early days of conflict in order to allocate national and defense assets to find and deliver desired effects. A more aggressive approach would see the Army made

the supported command during early-entry operations. This change would allow the joint force commander to adjust the targeting cycle process to operational conditions, depending on the access of air, land, or sea forces at any given point in time.

The multi-domain operations concept acknowledges the challenges of adversary anti-access and area denial in the near future. Current joint doctrine was written in an operational environment that assumed U.S. dominance in the air and traditional phased operations. Once it develops long-range artillery, the Army will be able to better plan, synchronize, and manage long-range interdiction in enemy rear areas to mitigate the inability of the Air Force to penetrate that far. However, for the entire U.S. military to take

advantage of future Army capabilities, it will have to work closely with the Army and the Air Force to develop new concepts, technologies, and adjust current doctrine. Designating the Army as the main effort in delivering interdictory effects throughout the joint operational area, at least for some initial period of time, is an approach worthy of further study and experimentation.

Editor's Note: This article first appeared in War On The Rocks on 17 October 2019 at this URL: <https://warontherocks.com/2019/10/in-the-opening-days-of-war-let-the-army-lead-on-targeting/>

NEW HANDBOOKS

This year the Commandant approved the publication of a revised XO's Handbook and a MLRS Battery Leader's Guide.

These handbooks are intended for the battery senior leadership (officer and NCO) of their respective formations.

The guides are intended to assist these leaders in conducting Large Scale Combat Operations (LS-CO), both fully enabled and under degraded conditions.

The handbooks are not intended to replace or supplant unit TACSOPS. If you would like a copy of one of the documents in an format that can be edited to support your TACSOP development and revision, The FA Commandant's Office would be happy to provide it to you. Please send these requests to Mr. John Folland at john.m.folland.civ@mail.mil or (580)558-0831.



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By Major Jeremy Blascak

Reducing enemy combat power in the Deep Fight is ultimately the business of Fires and Intelligence professionals. As the Fires and Intel warfighting functions (WFFs) enable maneuver operations, the essence of that relationship hinges on the effectiveness of the Fire Support Task (FST). Commanders utilize the FST to approve the method by which they will ultimately locate and kill the enemy with surface and aerial delivered munitions. This process is essential to the prioritization and allocation of assets for intelligence collection efforts and targeting. The doctrinal Fire Support Rehearsal (FS RxL) highlights FSTs but without the level of granularity necessary to describe the execution of those tasks through all the available enablers. To properly plan, synchronize, and execute the fires and intelligence plan in support of maneuver forces, FSTs must describe the desired Effect,

forces prior to maneuver elements coming within range of opposing indirect/direct fire weapon systems.

ATP 3-09.90 (DIVARTY Operations and Fire Support for the Division) defines an FST as a “task given to a fire support unit or organization that supports the commander’s scheme of maneuver.”¹ Thus, FSTs translate the desired effects from the

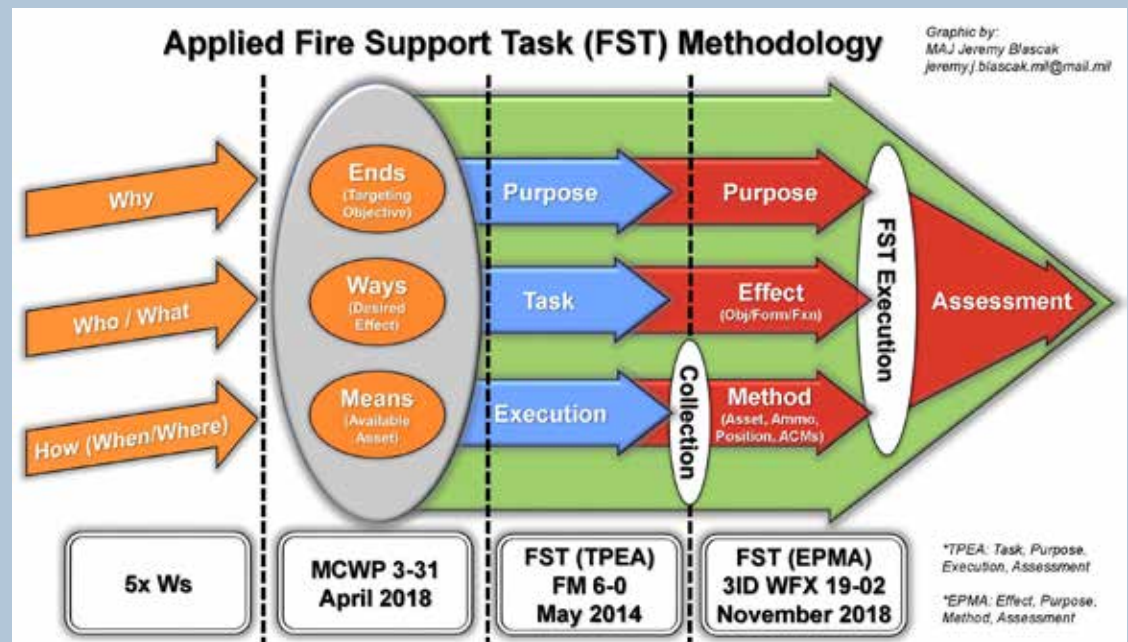


Figure 1: Fire Support Task (FST) Methodology, JAN 2019

maneuver commander’s guidance for fires into a fires plan and intelligence collection plan that will integrate the various related capabilities and fires assets to enable maneuver forces.

As the 3rd Infantry Division (3ID) executed Warfighter (WFX) 19-02 in November of 2018, the division staff utilized a force ratio calculator to identify the percentage of enemy combat power that must be attrited through fires assets in order to enable the maneuver plan. The Division Fires element then applied the required enemy attrition to the FSTs using an Effect, Purpose, Method, Assessment (EPMA) framework. The current FM 6-0 model of Task, Purpose, Execution, and Assessment (TPEA) does not maximize all the related capabilities and available

enablers in comparison to the EPMA structure, which utilizes a detailed and defined Method for fires assets. EPMA closely resembles the concept of Ends, Ways, and Means. 3ID utilized the EPMA structure to synchronize all the various enablers based on the desired effect described through objective/formation/function (Ways), the targeting objective to enable the maneuver plan (Ends), and the primary/alternate enablers along with Airspace Coordinating Measures (ACMs), ammunition constraints, and positioning requirements (Means) (Reference Figure 1). An unclassified example of a 3ID WFX 19-02 FST in EPMA format is below:

FST #1: Destroy Enemy Field Artillery Assets (Specify Unit).

- **Effect:** Destroy 1x Artillery Battalion's ability to place indirect fires on friendly forces.
- **Purpose:** In order to seize Division Objective and enable friendly scheme of maneuver.
- **Method:** Primary - MLRS/HIMARS (Discuss positioning / ammunition restraints).

Alternate - Fixed Wing (Discuss Airspace Control).

- **Assessment:** No indirect fires for eight hours and/or Enemy Artillery BN below 30% combat power.

Favorable RCPA (Relative Combat Power Analysis).
Check PIR/DSM for follow-on action.

After FST execution, the EPMA structure incorporates a timely assessment to rapidly provide feedback into the targeting cycle. During FST assessment at WFX 19-02, 3ID reviewed the current Priority Intelligence Requirements (PIRs) and Decision Support Matrix (DSM) to verify that the FST met all the details approved by the commander in the “if/and/then” statement. In the event the FST did not meet DSM requirements for the commander to make a decision, the fires and intelligence WFFs determined re-attack criteria to incorporate back into the FST and the 24-hour targeting cycle. Therefore, the EPMA framework proved to be extremely successful in WFX 19-02 as it provided the details necessary to execute the fires plan while effectively communicating that information across all the WFFs. The EPMA method streamlined the 3ID fires planning process and 24-hour targeting cycle in comparison to the doctrinal TPEA structure which lacks the detail needed for a fight against a near-peer competitor across complex terrain.

The Fire Support Rehearsal

Current FS RxLs typically resemble an Operation Order (OPORD) brief beginning with a list of the FSTs by either TPEA or Task, Purpose, and Desired Effect, then transition into the details of each target.

SEQUENCE OF EVENTS:	
INITIAL SET:	
BRIEFER	TOPIC
BCT FSNCO	Roll call
BCT S3	Terrain model orientation
BCT S2/Fires BN S2	Enemy initial set (same format as BCT CAR)
S7/ IOCOORD	Town assessments, ongoing IO OPS, themes, messages
FSO	Commander's guidance for fire support (FSTs, Priority of fires, FSCMs)
BAO / S3 Air	AC2 Orientation
BCT S3/FSO	Current friendly set (Same as S3 initial set for BCT CAR)
MICO	IEW Baseline/ Collection plan overview
BOLT	Briefs ROE and relevant restrictions in theater (I.E. PID, Collateral Damage Assessments. Can be mission specific determined by terrain, population, and other coalition forces)
OFFENSIVE OPERATION: (Brief in the following sequence for each event)	
S3/FSO	ACTION: BCT scheme of maneuver/critical event
MICO	Collection/ ISR scheme (Who is seeing what?)
BCT FSO/TF FSO	Friendly action checklist (TTLODAC-F format)
BAO / S3 AIR / ALO	Airspace activation/ deconfliction
Fires BN S3/FDO	Btry/Gun Location (s), TGT #, number of rounds by type
CA/PSYOP	IO Actions
S2	REACTION: Accurate subsequent enemy actions (enemy action checklist)
S3/FSO	COUNTER-ACTION: BCT scheme of maneuver/critical event
MICO	Collection/ ISR scheme (Who is seeing what?)
BCT FSO/TF FSO/	Friendly action checklist (TTLODAC-F format)
BAO / ALO / S3 AIR	Airspace activation/ deconfliction
DS BN S3/FDO	Btry/Gun Location (s), TGT #, number of rounds by type
CA/PSYOP	IO action checklist
(Next maneuver event--ACTION)	

Figure 2: BCT FS RxL Excerpt, FS Planning White Paper, FA School, JAN 20019

To convey that information, most FS RxLs use the Fires Support Execution Matrix (FSEM) and Target Description, Trigger, Location, Observer, Delivery System, Attack Guidance, and Communications (TTLODAC) for planned targets to create a thorough understanding of the sensor to shooter linkage for each target from trigger to delivery asset (Reference Figure 2). The underlying issue is that this method focuses on the technical aspects of prosecuting individual targets while failing to connect the commander's intent and maneuver plan to the required shaping efforts and targeting assessment. The FSEM and TTLODAC are useful at lower echelons but for the Brigade, Division, and Corps level, the current doctrinal FS RxL fails to answer the essential question of how the unit intends to find the enemy and kill them.

3ID reorganized the FS RxL structure for WFX 19-02 by beginning with an intelligence assessment of what enemy assets present the most threat to friendly forces and followed with how collection assets will identify them. The fires representatives then prioritized those threats and determined each FST's Effect, Purpose, and Method to achieve the

commander's desired end-state. The FST EPMA structure then became the core of the FS RxL with a discussion on each critical event by FST where all the related capabilities and enablers to include Electronic Warfare (EW) and Information Operations (IO) have the opportunity to rehearse and synchronize across the WFFs. 3ID used this rehearsal structure to combine the Fire Support RxL with the Intelligence Collection (IC) RxL in an effort to synchronize and deconflict the plan while effectively communicating it across the formation. The FST EPMA structure then fed directly into the 3ID Combined Arms RxL (CAR) for WFX 19-02 creating a continuous thread from one rehearsal to the next further solidifying a common understanding and reducing potential friction points.

Conclusion

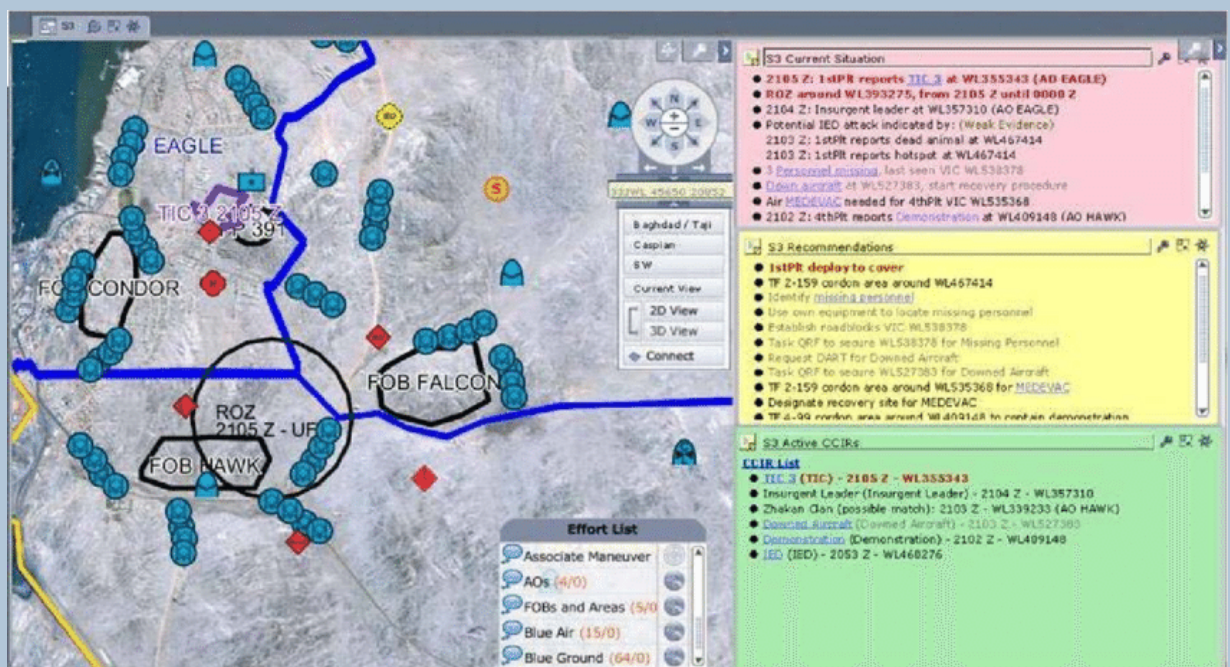
The Fire Support Task (FST) is a contract between the maneuver commander, Fire Support Coordinator (FSCOORD), and fires assets to support the maneuver plan with surface and aerial delivered munitions. To achieve the commander's intent for fires, it is essential to frame FSTs by Effect, Purpose, Method, and Assessment (EPMA) when fighting on complex terrain against near-peer competitors. The FS RxL must then incorporate the FST EPMA structure as the focal point of the discussion to ensure thorough planning across the WFFs and a common understanding of the requirements to achieve the desired enemy attrition and maneuver commander's end-state. To effectively shape as a division, 3ID utilized the FS RxL and the FST EPMA structure to identify what enemy assets could "kill the division" and focused all available capabilities to reduce those threats before they became a threat to the brigades.

Fires and Intelligence Rehearsal Script (Example)

PH III (Critical Event – Shaping Fires)

- **Scheme of Maneuver** (Operations Officer)
- **Focus of Fires** (FSO)
 - HHQs Shaping Efforts
 - Unit Shaping Efforts
 - HPTL, FSCMs, POFs, Restrictions
- **Radar Management** (Counter-Fire Officer)
 - AoS, Queuing, Zones
- **Air Defense** (ADAM/BAE)
- **Fire Support Tasks (Prioritized LAW HPTL)**
 - ENY Situation for FST (Intelligence Officer)
 - Collection Plan to support FST (Collection Manager)
 - **Effect** (FSO)
 - Objective / Formation / Function
 - **Purpose** (FSO)
 - **Method** (FSO) (Assets briefed as they would engage target)
 - Surface Fires (Artillery Operations Officer)
 - Primary/Alternate PAA for planned targets
 - Movement Triggers
 - Range Considerations
 - Ammo Expenditure
 - Fixed Wing (Joint Fires / ALO)
 - Allocations
 - Airspace Control
 - Weaponing
 - Rotary Wing (CAB FSO)
 - Primary/Alternate by planned targets
 - Movement timing / FARP plan
 - SEAD
 - Ammo Expenditure
 - Cyber Electromagnetic Attack (CEMA Officer)
 - Information Operations (IO Officer)
 - **Assessment**
 - MOP/MOE (FSO)
 - Collection Asset (Collection Manager)
 - Results of Shaping efforts (Intelligence Officer)

Figure 3: FS RxL Example, 3ID WFX 19-02, NOV 2018



The Ballistic Review Board

By: Capt Evan R. Klag

Overview

The Ballistic Review Board (BRB) is composed of the project managers, Training and Doctrine (TRADOC) Capability Managers (TCM), and additional personnel from Armament, Research, Development and Engineering Center (ARDEC) for the fire support community. It convenes, in person, twice a year at Picatinny Arsenal, New Jersey. The BRB serves as the requirements manager for the community but it is not an approval authority. Each respective TCM organization approves, rejects, or defers proposed requirements submitted by the BRB. The benefit of the BRB is it increases coordination among the myriad organizations that develop software and hardware used by the community to ensure interoperability between all of our systems.

Representation

The Marine Artillery Detachment at Ft. Sill sends at least two instructors to participate at each BRB. Typically a Captain Gunnery Instructor and an Instructor from the Enlisted Gunnery School attend each meeting. This allows the instructors to establish working relationships with key players in the community as well as provides a venue for the instructors to bring up issues with current platforms that they or the fleet have encountered. It also widens the aperture for the Marine instructors present which allows them to share that knowledge with their students and Army Instructor counterparts who typically do not attend. The continued engagement from the Marine instructors and subject matter experts at the BRB recently led to Firing Tables and Ballistics (FTaB) finding a solution to the illumination height of burst (HOB) issue for illumination marking missions that has vexed many a Fire Direction Officer (FDO). The fire control information (FCI) will be updated in the next NATO Armament Ballistic Kernel (NABK) super file drop scheduled for the spring of 2020.

August 2019 Meeting

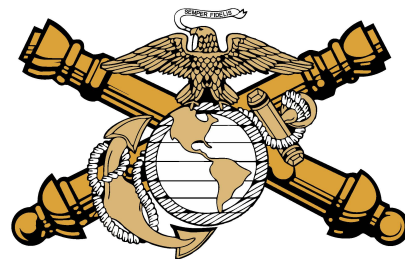
All the stake holders get an opportunity to present at the BRB, however one topic dominated the discussions: Long Range Precision Fires (LRPF). Much of the time was spent updating the many programs that are involved with greatly

extending the range of our cannon fires. Some of the programs involved with LRPF include new weapon system(s), propellants to include super charges and a stub charge, auto loaders, fuzes, fuze setters, meteorological data, munitions, and radar systems. Due to compressed timelines to meet requirements in range, accuracy, and lethality for LRPF many of these programs are being developed concurrently, which makes testing difficult. An example of these challenges is that it is difficult to test a fuze before the munitions and propellants have finished their testing period. It will take immense ingenuity and a little bit of luck from all those involved to have all the new systems operational at roughly the same time.

Another topic that got some air time at the BRB was the Cannon Delivered Area Effects Munitions (C-DAEM) program. This program is meant to replace Dual Purpose Improved Conventional Munition (DPICM) rounds. C-DAEM is split into two increments, one to defeat armored vehicles and the other to engage personnel and light skinned vehicles. There are a number of options currently being considered by the engineers and program managers and may require more than one munition to meet the requirements of both increments. The complexities of these new programs highlights the importance of the BRB. Without a common repository for all of these requirements it would be even more difficult to keep all these glass balls in the air.

(Note: Want More Info on This Report?)

If you are interested in additional details or more technical information regarding the latest BRB, you can find the entire trip report on the Marine Detachment sharepoint: <https://eis.usmc.mil/sites/ftsill/S3> (in the trip reports folder under the documents section).



A Battery Commander's Lessons Learned from National Training Center Rotation 19-07

By CPT Kiernan M. Kane

In December 2018, the 2nd Armored Brigade Combat Team (ABCT) was set for an intensive training cycle to prepare for its first return to the National Training Center (NTC) in more than a decade. Only six months prior, the 1-9 Field Artillery Battalion, located at Fort Stewart, Ga., had converted to a mechanized force and was slated to provide fire support to the ABCT. The following article is a reflection on failures and discovery that occurred during one battery's rotation as a part of the Army's newest ABCT. Hopefully, these points provide lessons learned to current and future battery commanders as they prepare and focus their units to fight and win at the NTC.

Master the Fundamentals within the Fire Direction Centers (FDCs). Nearly all of the issues that occurred within the battery and affected the battery's ability to provide timely fires occurred in the battery FDC.

The battery fought using a Battery Operations Center (BOC) and Platoon Operations Center (POC). The battery's center of gravity occurred within the POC as it had complete control of all firing Paladins within the battery's position area for artillery (PAA). Many of the issues the POC encountered were due to a lack of training at home station on special munitions that were critical in decisive operations (i.e., the breach) for the brigade. Specifically, the unit struggled in the employment of smoke during the obscuration for the breach due to poor voice commands from the battery FDC to the gun line and lack of necessary crosstalk back to the battalion FDC. Improper placement of a platoon led to check-firing procedures as another battery conducted a survivability move and fell within the "danger area echo," the danger zone in front of the guns, of one of the firing platoons. The POC didn't realize the platoon was outside the confines of the established PAA and the platoon was forced to conduct a move

outside its established "goose egg" resulting in a lengthy process to conduct occupation and dry-fire verification. The waves of friction accumulated to nearly 45 minutes of no smoke in support of the brigade's breaching operation.

Ultimately, I recommend home station digital sustainment training (DST) conducted internal to the battery and as a battalion event with sensor-to-shooter chain exercised weekly. Once the platoon fired the initial smoke rounds, there were still struggles in the FDC adjusting the smoke rounds' accuracy immediately highlighting the FDC's lack of training in the employment of smoke. At home station training during battery/platoon qualifications and certifications, as well as during battalion DST, we failed to incorporate operational friction into training. Instead of DST serving as only a communications exercise, we needed to incorporate building tactical fire direction solutions to these special munitions and rehearsing execution from sensor to shooter with adjustments. Furthermore, we needed to incorporate notional ammunition into DST and exercise ammunition resupply triggers forcing the POC to be forward thinking in its methods of fire. The duration of the fire mission and the necessity to conduct survivability moves all affect the measure of performance for the field artillery task (FAT) at hand. As well, all of this must be conducted using the FDC's fire mission processing primary, alternate, contingency, and emergency (PACE) communication platforms. All means of communication platforms must have communications security (COMSEC) and force the FDC to use Joint Battle Command-Platform (JBC-P) and high frequency (HF) systems to conduct fire mission processing. Although the primary means is digital fires from sensor to shooter, firing capability must be retained at all times by maintaining secondary and tertiary means of validating technical solutions within the POC. How we managed was by using the BOCs Advanced Field Artillery Tactical Data System

(AFATDS) as the secondary means, and the Centaur as a tertiary means to ensure firing capability across the PACE plan. Finally, the output of a successful fire mission within DST must yield gun target line, maximum ordnance, and processing time within the FDC. At the gun line, this means fire support coordination measure (FSCM) synchronization, ammunition requirements and/or shortfalls, validated turret loads, and trigger refinement. Once at the NTC, POCs and BOCs must continually rehearse targets and potential areas for targets using operations and intelligence updates to pull critical data and ensure they maintain a responsive firing capability to the BCT.

Ammunition management begins with you.

Primary responsibilities as a battery commander include receiving the commander's intent for fires, understanding the FATs assigned to the battery, and synchronizing the target list worksheet with the battery's primary and alternate responsibility for targets in order to give proper guidance for turret loads. I did not practice this enough at home station or to the level that I wanted to as a new battery commander. This was evident when the battery continued into the Whale Gap and became responsible for shooting obscuration. The fire order that was pushed down requested more smoke and we didn't have the capability immediately on the guns to shoot the mission. The M988A2 Ammunition Carriers, dispersed over 200 meters from the guns, had to take the additional time to notionally re-supply the guns in order to meet the fire order, delaying our responsiveness.

A blind spot in our training leading up to the NTC was our inability to foresee the tempo in which we would be expected to shoot, transition, and plan. Ammunition management was a challenge of getting the correct ammunition numbers from the gun line and validating those against what the FDCs were tracking. One of the "sustains" for the battery from the observer-coach/ trainers (OC/Ts) was that all leaders were constantly battle tracking ammunition. From the gun line to the ammunition carriers and to the palletized loading systems (PLSs), both sets of platoon leaders, platoon sergeants, and gunnery sergeants would track and synchronize their ammunition numbers multiple times a day. Though not always perfect, the battery had the right personnel involved who knew the mis-

sion requirements and FATs enabling them to anticipate resupply triggers at their level.

The NTC will force the battery to maintain updated DA Form 4513s, "Records of Missions Fired" in order to properly track ammunition on hand. Use of the DA Form 4513 must be rehearsed and ingrained at home station training events. One of the "sustains" of our train-up was rehearsing the notional ammunition aspect which forced the battery to use its entire hauling capacity and maintain DA Form 4513s for each vehicle. Recommend incorporating this into your certifications and platoon-level training to get your ammunition carriers and PLSs involved and tracking the current situation. If everyone is responsible for tracking ammunition, it creates a shared understanding of the FAT the battery is supporting and the necessary ammunition triggers that will drive resupply operations. There will also be a greater appreciation for these resupply triggers based on time-distance analysis and survivability movement criteria. At the NTC, the battery fought well outside the confines of a 2km x 2km area. Dispersion was critical and it takes proper rehearsals to trigger a gun or ammunition carrier movement for resupply if they are 200-300 meters apart. Furthermore, the ammunition carriers must be reloaded after long duration missions or once there is a transition point between missions. Typically, the PLSs for the battery were staged with the battery headquarters element over one kilometer or a terrain feature behind the battery's firing platoons. Incorporate these critical players into home station training by rehearsing notional ammunition and resupply triggers constantly. The tempo and demand for fires at the NTC is overwhelming at times and it can't be the battery's first time responding to this high level of friction and stress once there.

Employing the BOC: Enable mission command and shared understanding at echelon. During the battery's quick train-up focusing on artillery tables XII-XVIII, we failed to integrate a BOC into our progression. At the NTC, we established requirements practicing and refining our BOC/POC transfers. The BOC was collocated with the POC, within 300 meters of each other, concealed by terrain, and antennas erected to gain directional line of sight with the battalion tactical operations center (TOC) or battalion retransmission site. The BOC, during both force-on-force and live fire, was intended to serve as a "warm"

FDC that maintained digital and voice communications with battalion and constantly battle tracked the enemy situation; friendly disposition with task and purpose; and, battery-level reporting requirements to include vehicle slants, ammunition on hand, sensitive items, personnel, and logistical forecasting. Reports were gathered from the platoon leaders, funneled through the BOC for consolidation, and reported to battalion at pre-designated times. What occurred during the rotation, due to lack of BOC integration into home station training scenarios, was the BOC became an FDC crew-rest cycle and a “warm” FDC that would only provide a box operator to run an additional AFATDS as a secondary means in the event of loss of digital capability in the POC. The battery was able to maintain redundant firing capability within the POC, yet failed to enable shared understanding or provide information that would inform decisions at the battery level. For example, while monitoring the pace of the operation, we would find that we had surpassed triggers for necessary movement, triggers or conditions had changed, or the enemy disposition/composition was different than what was last reported from higher headquarters. In one instance, we could hear signs of contact but could not get an accurate assessment from battalion or adjacent units of where the enemy counterattack was coming. Ultimately, the entire unit was outflanked along the southern seam of the brigade and the platoon-size enemy BMP force enveloped one of the firing platoons.

The NTC will test systems and processes at echelon, and in order to enable aggressive and informed decisions at the battery level, the BOC must gather information from both battalion and adjacent units. In a prolonged force-on-force engagement, higher headquarters would be consistently planning or focused on transitions. In our situation, there eventually became fewer current operations and reports in real time that provided an operations and intelligence picture of the current fight. It is the battery commander’s responsibility to gain that information and the BOC is the means to request, receive, and project the current operations picture down to the lowest level. Furthermore, the battery must set up battle rhythm of operations and intelligence briefings down to the lowest Soldier utilizing PACE to ensure shared understanding enabling decision making at the section level.

Remain coachable, get better every day and finish through the tape. The most important part of the NTC rotation that I discovered is how “winning” is truly defined. Prior to starting the rotation I shared with the platoon leadership that, if anything, I wanted us to learn and get better every single day in the box. We would be wasting our time if it was not pressed upon the OC/Ts how your section could improve, how you could personally improve, and how the battery as a whole could improve. I demanded that each OC/T provide us with continued coaching. We were extremely fortunate in having a great group of OC/Ts that were informed of our capabilities, our shortcomings, and where we wanted their assistance to make the battery more lethal. The battery deployed to the NTC with a draft battery tactical standard operating procedure (TACSOP) that had not been validated. It was paramount that we improved every day, but even more important was the ability for leaders to codify their hard-won lessons so future leaders in their positions a year from now could benefit. There were designated officers on both the gun line and FDC side that were responsible for updating the battery TACSOP and would take notes in every after action review that would make their way into TACSOP revisions.

The proudest I was throughout the rotation was the final day of live fire. The POC was finishing through the tape and we consistently provided timely fires in support of the brigade. The battery had significantly improved in its employment of smoke and family of scatterable mines (FASCAM) missions and were relied upon by the ABCT on that last day to provide fires. The OC/Ts consistently stated how the mentality of the battery enabled us to improve up until the very last day. We didn’t win by trying to defeat Blackhorse every day. We won at NTC by fighting every day to get better and beat who we were yesterday.



DIVISION ARTILLERY (DIVARTY) S2

LESSONS LEARNED AND BEST PRACTICES IN LARGE-SCALE COMBAT OPERATIONS

By CW3 Stephen Barber, MI Intelligence Warfighting Function OC/T, Operations Group Bravo, Mission Command Training Program, Combined Arms Center
Also see Editor's Note @ end of article

1. Purpose. To provide commanders, senior decision-makers, senior intelligence officers, fire support coordinators (FSCOORD), targeting officers, and intelligence analysts with a qualitative and quantitative analytical approach to Division Artillery (DIVARTY) S2 lessons learned and best practices observed during six Warfighter Exercises (WFX 18-3, WFX 19-1 thru WFX 19-5). This paper discusses nine focus areas that are relevant to supporting DIVARTY and Division operations in Large-Scale Combat Operations (LSCO) against a near-peer threat. These focus areas are: **contribution and integration with Division G2, enemy counter fire analysis, input to the Division's targeting process, integration of Ground Moving Target Indicators (GMTI), manning shortages and intelligence architecture, synchronization with adjacent DIVARTY S2s, integration of the terrain team, and federated battle damage assessments.**

2. Introduction. The Force Field Artillery Headquarters (FFAHQ), DIVARTY provides the Division with fire support through precision and area surface-to-surface munitions to create desired effects and shape conditions for maneuver operations.¹

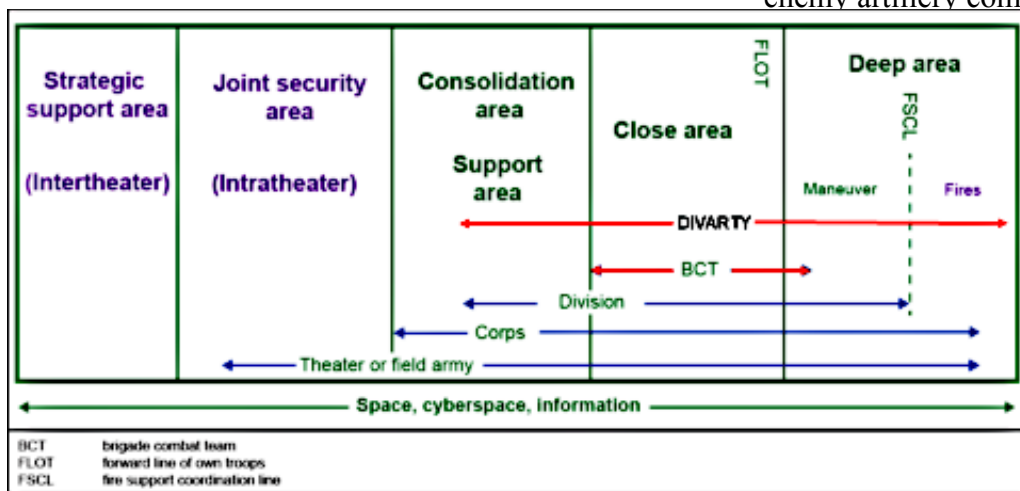
Unless the Division is task organized with a reinforcing Field Artillery Brigade (FAB), the DIVARTY often serves as the Counter fire Headquarters (CFHQ). Based on observations from six WFXs, the Division's success with effectively targeting high-payoff targets in the deep area is enhanced and sometimes dependent on the DIVARTY S2's understanding of enemy artillery disposition and composition.

In the past five WFXs, Divisions lost the majority of their combat power (70-75%) from enemy artillery. The World Class Opposing Force (WCOPFOR) uses long-range artillery capabilities by massing fires from dispersed locations to destroy key friendly units, which is often the leading Brigade Combat Team (BCT) during forward passage of lines.² The enemy positions artillery relative to Brigade Tactical Groups (BTG) in the disruption zone, battle zone, and support zone. This requires the DIVARTY S2 to provide the DIVARTY Commander and staff with timely, accurate, relevant, and predictive intelligence on enemy artillery units that spans the Division's entire Area of Operation (AO) and often part of the adjacent Division's AO.

3. Contribution and Integration to Division.

The role and responsibility of the DIVARTY S2 is largely undefined. Today's brigade-level doctrine (ATP 2-19.4, BCT Intelligence Techniques) is focused on the BCT, it does not address the DIVARTY S2's contribution to the Division's enemy situation template (SITTEMP). As a form of reverse IPB, the DIVARTY S2 views the Division operation through the lens of the enemy artillery commander; advising on where and

when artillery capabilities would be employed and the associated enemy battlefield geometry. ATP 3-09.90 (Division Artillery Operations and Fire Support for the Division) briefly addresses DIVARTY S2 duties, however the description is generic, lacks detail, and doesn't describe how the DIVARTY S2 supports the Division and targeting process.



DIVARTY S2 vs BCT S2 Focus Area Comparison by Operational Framework

¹ Army Techniques Publication 3-09.90, Division Artillery Operations and Fire Support for the Division, OCT 17
² Field Manual 7-100.1, Opposing Force Operations, DEC 04

The Military Intelligence Training Strategy (MITS) is the standard process that assists and enables commanders to efficiently assess and evaluate the Intelligence Warfighting Function's capabilities in an objective and quantifiable manner.³ Like brigade-level doctrine, MITS is focused on the BCT, not multifunctional brigades, including DIVARTY. According to ATP 2-01.3 (Intelligence Preparation of the Battlefield (IPB)), IPB is a collaborative staff effort, extending to functional expertise from functional brigades including the DIVARTY and the Combat Aviation Brigade. Based on five WFXs observed and through artillerization of IPB, the DIVARTY S2s have established themselves as the Division's subject matter expert for artillery capabilities. Their roles and responsibilities require them to have a close working relationship with Division's G3 Fires, Division Targeting Officer, Division G2 Intelligence Officer, Analysis and Control Element (ACE) Chief, Information Collection Manager, and Field Artillery Intelligence Officer (FAIO). The DIVARTY S2 helps the Division understand the enemy artillery threat and provides enemy unit entities for consideration as valid, legitimate, military targets when the criteria of target vetting is satisfied.

4. Enemy Counter Fire Analysis.

Methodology. The DIVARTY S2 produces a counter fire density plot (commonly referred to as a "heat map"), which is a spatial and temporal representation of enemy artillery counterfire acquisitions. The S2 uses a combination of Joint Automated Deep Operations Coordination System (JADOCS) and the Distributed Common Ground System – Army (DCGS-A) to analyze and visualize enemy artillery patterns. JADOCS provides the S2 with the enemy Counterfire Common Operational Picture (COP) tool, which depicts the points of origin/impact locations and can be filtered by time, range, and source. It is important to note the significance of ensuring DIVARTY 13 series/131As are trained on how to employ and configure JADOCS, a point that has been well documented by the Army Targeting community.⁴ The S2 uses DCGS-A's Geospatial Intelligence Workstation (GWS) to overlay the JADOCS' Counterfire COP data to determine where the highest volume of enemy indirect fire is coming from and which friendly unit(s) they are massing fires on. As an alternate to JADOCS, the Effects Management Tool (EMT) is a software client capable of enabling countefire analysis. The S2

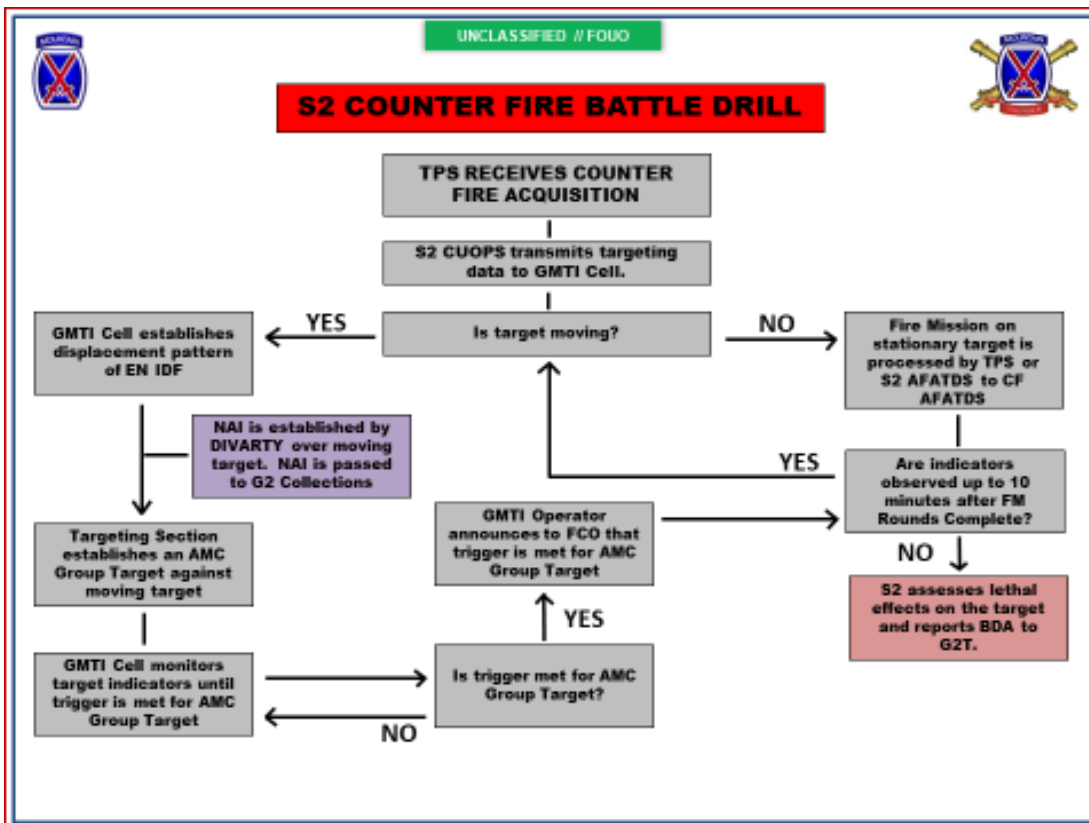
exports the enemy SITTEMP from DCGS-A's Intelligence Fusion Server (IFS) onto the GWS, which allows intelligence analysts to correlate and assess which enemy unit(s) and associated weapon systems are firing on friendly forces. Correlating the distance fired, type of munition, rate of fire, and enemy SITTEMP often allows the S2 to distinguish if the fires originated from a Brigade Artillery Group (BAG), Division Artillery Group (DAG), or Integrated Fires Command (IFC). Finally, the S2 analyzes the times of day when friendly forces receive the highest volume of fires, which in turn enables the S2 to assess friendly triggers and when the enemy is conducting reconnaissance and sustainment operations. Including the S2's heat map in the Division G2's daily Graphic Intelligence Summary (GRINTSUM) is a best practice for increasing shared understanding across Division staff and subordinate units.

Input to the Division's Targeting Process. Following consecutive days of data collection and analysis, DIVARTY S2s have been able to predict when and where the enemy artillery will be, which serves as a critical input to the Division Targeting Working Group (TWG).

In the past five WFXs, the S2's counter fire analysis directly influenced the Division's target nominations, air support requests (ASRs), high-payoff target prioritization, and information collection plan for each daily air tasking order. The S2's assessment of enemy artillery disposition, composition, strength, and combat effectiveness helps refine the Division G2's overall assessment. Focused almost exclusively on enemy artillery units, it has become common for the DIVARTY S2 to be a participant of the Division TWG and provide an assessment on enemy artillery for the last 24 and next 48-72 hours. As the Division expert on enemy artillery, one of the best practices observed was for the DIVARTY S2 to brief their heat map at the start of the Division TWG and the Targeting Decision Board (TDB). The S2's analysis stimulates discussion between TWG participants and allows the Division to plan against the enemy units and weapon systems that are accounting for the preponderance of friendly combat losses. The S2's heat map supports each step within Decide, Detect, Deliver, Assess (D3A) targeting methodology and thus should be included as an input to the Division's TWG.

³ Training Circular 2-19.404, *Military Intelligence Training Strategy for the Brigade Combat Team Tier 4*, JAN 19

⁴ Crifasi, Jesse. *Digital Integration of U.S. Army Field Artillery Systems*. JUL 17



Example of GMTI Counterfire Battle Drill

Heat Map Vignette: In WFX 19-1, using a similar analytical methodology as noted previously, the DIVARTY S2's enemy SITTEMP was highly accurate and was able to help the Division visualize and describe the task and purpose of enemy artillery units operating in the close and deep fight. The analysis derived from the heat map served as an input to the Division TWG and helped the Division integrate joint fires in the optimal temporary windows of opportunity (right time and place), which resulted in increased lethality.

5. Integration of GMTI. DIVARTY intelligence and fires professionals continue to see the benefit of organically receiving GMTI to support artillery operations. According to ATP 2-22.7 (Geospatial Intelligence), a moving target indicator is a radar capability that shows targets in motion based on the speed and direction of movement.⁵ DIVARTY S2s leverage a battle drill that integrates GMTI to support dynamic targeting of enemy artillery during counterfire operations. Initiated by a counterfire acquisition, this battle drill utilizes GMTI to identify the enemy artillery units and provides a new location for a follow-on dynamic fire mission. In an effort to maximize the lethality of surface-to-surface fires with this battle

drill, S2s should integrate terrain analysis to identify suitable enemy position areas for artillery (PAAs) to help predict where the enemy may displace to, account for distance and speed of enemy unit, assess enemy unit and weapon system type, and account for munition time of flight. The battle drill has proved capable of disrupting the WCOPFOR's targeting decision cycle, which was measured by a reduction in the volume of fires on friendly forces. Intelligence architecture planning

and execution is key to streamlining and optimizing the battle drill. The DIVARTY Command Post's (CP) direct receipt of GMTI is beneficial to both current operations and planning. In theory, DCGS-A's Tactical-Intelligence Ground Station (TGS) can rebroadcast the GMTI feed to JADOCS' "MTI Manager" tool, which allows the operator to overlay GMTI with counterfire acquisitions, fire support coordination measures, and airspace coordination measures. To rebroadcast MTI into JADOCS, the TGS must use its Sensor INT Virtual Machine or MOVINT Client's Data Repeater Tool, increasing the DIVARTY's situational understanding of enemy artillery displacement and survivability. Unfortunately, the TGS can only rebroadcast GMTI in STANAG 4607 format (NATO standard agreement format for GMTI) and JADOCS can only ingest GMTI in NATOEX format, creating inoperability between DCGS-A and JADOCS.

GMTI Vignette: In WFX 19-5, the DIVARTY used the GMTI battle drill to disrupt a BTG conducting a counter-attack (C-ATK) to the Division's western flank. The C-ATK occurred during a period of "red weather", where attack aviation and joint fires were unavailable. As GMTI was not impacted by weather, the S2 used the GMTI battle drill to process

several series of group targets. The DIVARTY was able to slow the tempo of the BTG until the weather cleared, where air interdiction and close air support further attrited the BTG and prevented the C-ATK.

There are four methods for a DIVARTY CP to receive GMTI:

1. Direct receipt using the TGS' Surveillance Control Data Link (SCDL).
2. Direct receipt using the TGS' SCDL over Satellite Communication (SATCOM).
3. Rebroadcast receipt from Division's TGS using MOVINT Client's Data Repeater Tool to another DCGS-A P-MFWS or GWS loaded with MOVINT Client.
4. Streaming via SIPR Connection. This method is not recommended in LSCO as connectivity will likely be disconnected or degraded (low-bandwidth or intermittent) (DIL).

The trend of GMTI being leveraged by the DIVARTY has transcended intelligence channels.

6. Manning Shortages and Intelligence Architecture.

Unlike BCTs, current DIVARTY S2 Force Design does not include 35T (Military Intelligence Systems Main-tainer/Integrator), the only MOS trained and certified to maintain and integrate DCGS-A. The absence of 35T Soldiers prevents DIVARTYs from integrating and maintaining DCGS-A within unit communication architectures. The inability to integrate DCGS-A degrades the S2's understanding of the enemy situation and from supporting the commander's decision-making process. The absence of a 35T prevents the S2 from digitally publishing the enemy situation to the COP and from passing Target Intelligence Data (TIDAT) to the Advanced Field Artillery Tactical Data System (AFATDS). DIVARTY DCGS-A issues are mitigated by support from the Division G2's 35T/353T. Verbal agreements between the G2 and S2 for 35T support yield poor results during WFXs, as 35Ts must maintain intelligence systems in the Division's Main CP, Tactical CP, and Support Area CP (SACP). As a best practice, 35T support must be codified in the Division's Operations Order, with the DIVARTY emphasized as the priority multifunctional brigade for 35T support during all phases of the operation. In addition to being the FFAHQ and CFHQ, the DIVARTY CP provides the Division with an

“What is the status of the GMTI feed in the DIVARTY Command Post?” - Division Commander asking the FSCOORD during the Division TWG.

alternate CP and can perform mission command functions for the Division for a limited time.⁶

Thus, intelligence architecture and the ability to send TIDATs from DCGS-A to AFATDS is paramount. As a long-term solution, the Army should consider growing the DIVARTY force structure to include 35T and 35G (highlighted in the next paragraph). Force structure growth is a readiness initiative within long-range precision fires, the Army's top modernization priority.⁷

Expeditionary MI Brigade (E-MIB). E-MIBs are normally assigned or attached to a Corps, who usually place an MI battalion (E-MI BN) under operational control (OPCON) of the Division (which has been observed during recent WFXs). OPCON provides the Division with authority to organize the E-MI BN, affording the DIVARTY an opportunity to add the requisite personnel and capabilities needed to significantly enhance DIVARTY operations. Each MI BN is authorized four Processing, Exploitation, and Dissemination (PED) platoons, which include a TGS and eight 35G (Geospatial Intelligence Analysts). S2s should request a PED platoon (-) to be attached or Direct Support (DS) to the DIVARTY. The TGS provides the DIVARTY CP with the organic means of receiving electronic intelligence, national and commercial imagery, and real-time GMTI and full motion video in a DIL operational environment. Led by a 35G, the 35Gs provides the DIVARTY CP with the capability and capacity to perform battle damage assessment of counterfire missions, which allows the DIVARTY S3 to assess munitions effectiveness and reattack recommendations as part of the combat assessment process. The PED platoon (-) also provides the DIVARTY S2 with the means of performing order of battle analysis and identifying indicators of activities related to enemy BAGs, DAGs, and the IFC. When written as a structured intelligence report such as an Imagery Interpretation Report or Reconnaissance Exploitation Report (skills that have atrophied within Army GEOINT),⁸ the intelligence derived from the geospatial intelligence sources populate the

⁶ Army Techniques Publication 3-09.90, Division Artillery Operations and Fire Support for the Division, OCT 17

⁷ Memorandum, Implementing the Army's Modern-ization Priorities, OCT 17

⁸ Barber, Stephen. Geospatial Intelligence and Mes-sage Text Formats: Relying on an Atrophied Skill, DEC 17

DIVARTY enemy database. This allows the DIVARTY and Division to refine their current assessment of enemy artillery units' disposition and composition. In the spirit of the MI Corps' Training Strategy's strategic end-state of being capable at the tactical and operational level, 35Gs attached or DS to a DIVARTY should attend the Advanced Operational Course – GEOINT (AOC-G), Joint Targeting School, and the Digital Intelligence Systems Master Gunner (DISMG) Course.²

7. Synchronization with Adjacent DIVARTY S2s.

DIVARTY S2/Targeting MTOE:

- ★ S2 – O4 (35D)
- ★ Assistant S2 – O3 (35D)
- ✂ Targeting Officer – W3 (131A)
- ✂ Intel SGT – E7 (13J)
- ✂ Targeting NCO – E6 (13F)
- ★ Intel SGT – E6 (35F)
- ✂ Senior Geospatial Engineer SGT – E6 (12Y)
- ✂ Targeting NCO – E5 (13F)
- ✂ Targeting NCO – E5 (13F)
- ★ Intelligence Analyst – E5 (35F)
- ★ Geospatial Engineer SGT – E5 (12Y)
- ✂ Target Processing Specialist – E4 (13F)
- ★ Intelligence Analyst – E4 (35F)
- ★ Geospatial Engineer – E4 (12Y)
- ✂ Target Processing Specialist – E3 (13F)
- ✂ Target Processing Specialist – E3 (13F)
- ★ Intelligence Analyst – E3 (35F)
- ★ Geospatial Engineer – E3 (12Y)

* Denotes Soldier is from E-MIB HHC, not PED Platoon

Attached Element of E-MIB's PED Platoon:

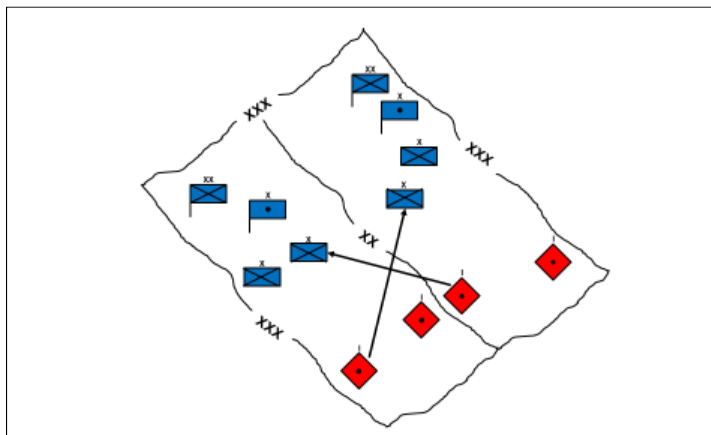
- ★ GEOINT Technician – W3 (350G)*
- ★ Imagery SGT – E6 (35G)
- ★ Imagery Analyst – E5 (35G)
- ★ Imagery Analyst – E5 (35G)
- ★ MI Systems Maintainer – E4 (35T)*
- ★ Imagery Analyst – E4 (35G)
- ★ Imagery Analyst – E4 (35G)
- ★ Imagery Analyst – E4 (35G)
- ★ MI Systems Maintainer – E3 (35T)*
- ★ Imagery Analyst – E3 (35G)
- ★ Imagery Analyst – E3 (35G)

Equipment: Tactical-Intelligence Ground Station



DIVARTY S2 MTOE with Attached PED PLT (-)

See Yourself. In a WFX scenario, multiple Divisions are required to conduct forward passage of lines across complex terrain. In this type of operational environment, Division boundaries are a communication barrier that slows the sensor-to-shooter process. The WCOPFOR's IFC (Corps-level artillery) maintains its long-range artillery capabilities and includes the 9A52 SMERCH (300MM multiple rocket launcher), which has a maximum range of 90 kilometers and can emplace and displace in three minutes.¹⁰ This weapon system, along with other artillery systems such as the M1991 (240MM multiple rocket launcher), BM-21 (122MM multiple rocket launcher), and G-6 (155MM self propelled howitzer), account for the majority of the Division's combat losses. The WCOPFOR employs PAAs that allow artillery batteries to execute cross-boundary fires, leveraging the complexity and time-consuming process for clearing ground and airspace during counterfire. This tactic allows the IFC to mass fires on the Division assessed

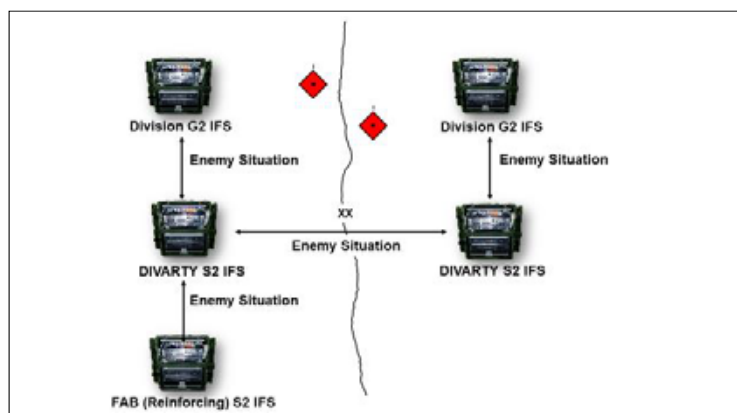


Example of Cross-Boundary Enemy Artillery Problem-Set

as the main effort or on forces conducting the decisive operations, such as a wet-gap crossing. This tactic requires two adjacent Divisions to coordinate and synchronize fires; which has proven to be a mission command challenge as each Division has different graphic control measures (maneuver and phase lines) and coordination measures (fire support and airspace).

See The Enemy. In order for two adjacent Divisions to synchronize cross-boundary fires, adjacent DIVARTY S2s must synchronize how they see the current enemy situation, which entails the disposition and composition of enemy artillery units. As a best practice, adjacent DIVARTY S2s should exchange their running intelligence estimates, heat map, and enemy SITTEMP daily. In coordination with the Division G2 and Corps G2, intelligence and information exchange between adjacent DIVARTYs allows the Divisions to better understand cross-boundary threat by identifying those artillery batteries that are most likely and most capable of ranging friendly forces cross-boundary. This type of intelligence analysis collaboration is especially important for templating the IFC's 9A52, M1991 and G-6 battalions, which will be occupying PAAs across two Division AOs. From a systems perspective, DIVARTY S2 should connect their respective DCGS-A IFS and federate their Tactical Entity Database, which would allow the two units to share a common intelligence picture depicting enemy artillery weapon systems and units. Adjacent DIVARTY S2s should create and maintain a dedicated chat window (Transverse or Jabber) for sharing intelligence on enemy artillery units templated along the shared Division boundary. DIVARTY S2s who conducted an artillery-focused intelligence synchronization working group with adjacent

DIVARTY S2s and Corps or reinforcing FAB S2s were the most successful with understanding the enemy cross-boundary fires threat.



DIVARTY S2 Intelligence Architecture Synchronization

8. Integration of Terrain Team. The terrain team is an underutilized asset within the DIVARTY S2 section. They are the primary authors of the S2 heat map, which every DIVARTY participating in a WFX this fiscal year has produced. The terrain team also provides the DIVARTY staff with tailored geospatial products, maps used for analog battle tracking and planning, and geospatial information and services for each of the mission command information systems. Specific to the DIVARTY, the terrain team plays an important role during IPB with assisting the S3 team for identifying suitable PAAs for friendly and enemy artillery batteries. Additionally, the terrain team plays a key role in assisting the DIVARTY with survivability by conducting mobility studies between PAAs and key terrain features that provide both enemy and friendly artillery units with a tactical advantage. The terrain team also assists friendly batteries in planning for the Division's decisive operations such as the wet-gap crossing with terrain analysis on bank conditions (soil trafficability and stability), water depth and speed, enemy observation points based on line of sight analysis, and avenues of approach. The terrain team is equipped with tremendous capabilities in their GWS, however roughly half of all DIVARTYs fail to plan and integrate their system into the communications architecture, leaving the GWS isolated (off the network) and preventing them from sharing products and analysis with the staff.

; 0Hgf gtcvgf 'Dcwg'Fco ci g'Cuguo gpw' F C-0DF C'ku'c'qr le'j cv'j cu'dggp'f luewu'gf 'kp recent literature with similar points of emphasis which include the complexity of BDA in LSCO and the associated challenges of performing BDA with limited time and

resources.¹¹ MG(R) Richard Longo, a senior field artillery officer and former DIVARTY Commander said recently during an FY19 WFX, "It might be more accurate to call the Army's targeting methodology A-D3A, because the cycle must start with a good assessment."¹²

Assessments are incredibly important to the targeting process, and one could even propose that we should consider assessing the criteria and methodology of how we're assessing effects. This concept is especially true with the DIVARTY. In situations where a sensor or observer are unavailable to observe effects, S2s are reluctant to perform estimated damage assessment (EDA). EDA is performed when required and uses "mission reports, weaponeering predictions, and the results from similar attacks to assess the attack." EDA is based on the accuracy and reliability of a weapon and its known effects on a target type based on probabilities of damage or kill.¹³

As a best practice, the S2 should provide EDA from counterfire missions to the Division G2 Targeting team, who should be maintaining overall BDA metrics as a result of combat aviation, BCTs, and joint fires.

10. Conclusion. Based on WFX observations, the DIVARTY S2 has proven to be a significant contributor to the Division's intelligence enterprise and enhances the Division's ability to effectively target enemy artillery capabilities. The tactics, techniques, and procedures outlined in this paper should be considered for future decisions regarding DIVARTY doctrine, organization, training, material, leadership and education, personnel, and facilities (DOTMLPF). According to Training and Doctrine Command, the "weight of fire produced by standard multiple rocket launcher and cannon artillery employed in mass present the greatest danger to friendly ground forces."¹⁴

Specifically, by empowering the DIVARTY S2 to serve as the Division's expert on enemy artillery, incorporating their assessment into the targeting process, augmenting the DIVARTY S2 section to leverage GMTI, and emphasizing EDA, the DIVARTY increases the Division's lethality. Each WFX, friendly forces must be regenerated due to significant combat losses

¹¹ Wolf Ashton, *Tying it Together: The Battle Damage Assessment Challenge*, APR 19

¹² Longo, Richard and Jeff Schmidt, *Fires Solutions for the Division Targeting Board*, OCT 18

¹³ Franklin, Todd and Stephen Barber, *The Art and Science of BDA in Large-Scale Combat Operations*, SEP 18

¹⁴ TRADOC Pamphlet 525-3-1. *The US Army in Multi-Domain Operations 2028*, DEC 18

from enemy artillery, which is the result of our inability to understand and deal with the threat. In real-world operations, there are no second chances (regeneration) and windows of opportunity are temporary. The lessons learned and best practices defined in this paper serve as a means to increase our understanding of enemy artillery, optimize existing S2 capabilities, and strengthen our foundation for the future.

11. Resources and Recommended Reading.

A. Division Artillery S2 and Field Artillery Brigade S2 Community of Interest:

<https://www.milsuite.mil/book/groups/divarty-fab-s2-community-of-interest>

B. Artillerization of IPB in Large-Scale Combat Operations, by MAJ Leslie Stanfield, former Brigade S2 for 1st Armored Division Artillery.

C. Proving the Worth of the Division Artillery S2: Ground Moving Target Indicators and Targeting Integration Lessons Learned from Warfighter Exercise 19-5, by MAJ Matthew Corbett, Brigade S2 for 10th Mountain Division Artillery.

D. Aggressive Counterfire with Ground Moving Target Indicators in Large-Scale Combat Operations, by MAJ Calvin Roe and CW2 Timothy Porritt, Brigade S2 and Counterfire Officer for 1st Infantry Division Artillery.

E. Ground Moving Target Indicator Integration into Dynamic Targeting at DIVARTY in Large-Scale Combat Operations, by MAJ Jonathan Howard, former Intelligence Warfighting Function OC/T for Operations Group Bravo, Mission Command Training Program.

F. Challenges and Recommendations for Accurate Battle Damage Assessments in a Division Artillery Brigade: Lessons Learned from 25th DIVARTY Warfighter Exercise 19-1, by MAJ Charles Adair and 1LT Amy Saxton, former Brigade S2 and Assistant Brigade S2 for 25th Infantry Division Artillery.

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Editor's Note:

Article was penned with contributions from:

MAJ Christopher Hornsby,
FA Fires Warfighting Function OC/T,
Operations Group Delta, Mission Command Training
Program, Combined Arms Center

Endorsed By:

MAJ Les Stanfield –
Former 1st Armored Division Artillery S2
MAJ Andrew Spiess –
1st Cavalry Division Artillery S2
MAJ Calvin Roe –
Former 1st Infantry Division Artillery S2
MAJ Serenity O'Malley –
2nd Infantry Division Artillery S2
MAJ Graham Shelly –
3rd Infantry Division Artillery S2
CPT Thaddeaus Webb –
4th Infantry Division Artillery S2
MAJ Matthew Corbett –
10th Mountain Division Artillery S2
MAJ Charles Adair –
Former 25th Infantry Division Artillery S2
CPT Aaron Phillips –
82nd Airborne Division Artillery S2
MAJ Nicholas Albright –
101st Airborne Division Artillery S2

Approved By:

MG(R) Richard Longo –
MCTP Senior Mentor for Division Artillery and Field
Artillery Brigades / Former Division Artillery
Commander
COL Christopher Moretti Sr. –
Chief, Operations Group Bravo / MCTP Senior Field
Artillery Officer / Former Division Artillery
Commander

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Crifasi, Jesse. *Digital Integration of U.S. Army Field Artillery Systems*. JUL 17
Field Manual 7-100.1, *Opposing Force Operations*, DEC 04
Franklin, Todd and Stephen Barber, *The Art and Science of BDA in Large-Scale Combat Operations*, SEP 18

Maximizing Joint Targeting Synergy within the USINDOPACOM AOR

How to gain and maintain proficiency in leveraging joint capabilities during Multi-Domain Operations (MDO) in order to win against a near-peer adversary in preparation for tomorrow's conflict.



“The United States Armed Forces are at a crossroads, facing both institutional and operational challenges. The character of war continues to change at a quick pace, requiring military leaders to reassess some of their core beliefs. This situation has led to the testing and refinement of concepts, capabilities, and people to ensure U.S. forces are ready for the conflicts of today and tomorrow. Without doubt, any future conflict will be increasingly complex and distributed, involving actions across multiple domains—land, air, sea, space, and cyber—by multiple military services, at times simultaneously.”

- General Robert Brown
Commander, United States Army Pacific

Military operations are becoming more complex with the increase of kinetic and non-kinetic options available to commanders, as well as the rising threat to the U.S. by formidable near-peer adversaries. In the next major conflict, the United States military will not only contend with bullets and bombs, but with computers, satellites, and information as well. The expansion of military operations beyond air, land, and sea domains to include the space and cyberspace domains has broadened the targeting community necessity for cyberspace technicians, electronic warfare (EW) officers, information operations (IO) officers, and special technical operations planners.

Integrating the aforementioned expertise to achieve operational effectiveness and maximize joint targeting synergy against a complex, adaptive enemy resides with the Joint Force Commander (JFC) and his staff. During joint operations, the JFC habitually employs air, land, maritime, space, and cyberspace capabilities to present an adversary with multiple dilemmas and overwhelm their ability to decide and act. Historically, the JFC grants the Joint Forces Air Component Commander (JFACC) specific authorities that facilitate the synchronization and integration joint fires across all domains. The JFACC's method of performing these tasks and maximizing joint targeting synergy is by, with, and through the Air and Space Operations Center (AOC).

Joint Force Delegated Authorities

The 5th Battlefield Coordination Detachment (BCD) continues to enrich the partnership within the 613th AOC by combining forces to address the challenges the U.S. military faces in the Indo-Asia Pacific Theater. The 613th AOC Commander and the 5th BCD Commander have determined that a common misconception plagues our force. That misconception can be characterized by a single, yet complex statement within Joint Publication 3-0 – The Joint Force Commander normally delegates coordination authorities to the JFACC. The true significance of this statement has been lost in the simplistic lexicon, but we must examine the root to all associated coordination authorities that the Theater JFACC (TJFACC) currently shoulders within the United States Indo-Pacific Command (USINDOPACOM) area of responsibility (AOR). The JFC designates the following joint coordination authorities to the TJFACC: (1) Targeting Coordination Authority, (2) Information Operations /Non-Kinetic Coordination Authority, (3) Airspace Control Authority, (4) Collection Coordination Authority, (5) Intelligence, Surveillance, and Reconnaissance Coordination Authority, (6) Area Air Defense Commander, (7) Electronic Warfare Coordination Authority, (8) Jamming Control Authority, (9) Space Coordination Authority, (10) Director of Cyberspace Forces (DC4), (11) Director of Mobility Forces (DM4), and (12)

Personnel Recovery.

The conundrum the joint force faces is the ambiguity within doctrine that states the JFC normally designates the aforementioned authorities and delegates target coordination authority. Although the JFC may reserve all of the aforementioned authorities, the likelihood of that occurring is diminutive. The joint force has consistently established a precedent for all these authorities to be delegated to the JFACC. The JFACC's "weapons system" to execute all of the authorities resides with the AOC. The JFC historically authorizes the JFACC to synchronize and integrate joint fires because the AOC has the command and control infrastructure, adequate facilities with a certified targeting center, joint planning expertise and a robust intelligence apparatus.

According to Joint Publication (JP) 3-60, the primary purpose of Joint Targeting is to integrate and synchronize all weapon systems and capabilities. The synchronization of cross-domain targets in the USINDOPACOM AOR is facilitated by the target and effects team (TET), a critical team within the AOC. TET produces the draft Joint Integrated Prioritized Target List (JIPTL), which forms the foundation for the integration and synchronization of cross-domain effects. The AOC is also the lead for the coordination, tasking, and execution of cross-domain effects via the master air attack plan (MAAP) and air tasking order (ATO). Currently, the AOC is the only operations center in the USINDOPACOM AOR capable of coordinating across all components and space, cyber-space, air, maritime, and land domains. This cross-component/cross-domain coordination is made possible by the presence of component and functional representatives

within the AOC – Marine Liaison Element (MARLE), Naval and Amphibious Liaison Element (NALE), Special Op-erations Liaison Element (SOLE), Director of Space Forces (DS4), DC4, DM4, and BCD.

The "grey area" forms when service components are unclear of the roles and responsibilities incumbent to those authorities and coordination tasks delegated to the JFACC. Additionally, the service components are hampered by the lack of doctrinal knowledge of the Joint Air Tasking Cycle (JATC) and how it supports the Joint Targeting Cycle (JTC). The JATC is the TJFACC's process for effective and efficient employment of joint air assets and capabilities. It provides a repetitive process for planning, coordination, allocation and tasking of joint air missions that corresponds to JFC guidance. More importantly, the JATC is a systematic, iterative and responsive process that translates operational guidance into tactical plans. It is an analytical approach that focuses targeting efforts on supporting operational requirements. The JATC promotes flexibility and versatility with a series of ATOs and related products, which the JFACC can respond during execution at any time to changes in the operational environment. Those that are not familiar with the JATC often argue that this process does not offer flexibility and should be updated to provide more responsive Fires – be it kinetic or non-kinetic. Those that are against the JATC are merely focused on the deliberate aspect of targeting and do not take into account the dynamic targeting perspective. Each service component must rely heavily upon their representation within the AOC to overcome these hurdles and promote joint targeting synergy. The JTC and JATC are separate but integrally related processes (see Figure 1).

Service Components and their Liaisons to 613th AOC

As mentioned earlier, the AOC is where the art and the science of integration, synchronization and deconfliction of weapon systems and capabilities throughout all domains ultimately reside. The AOC systematically analyzes and prioritizes targets for all of the service components and conducts weaponeering of those targets to create specified desired effects, both kinetic and non-kinetic, that achieve the JFC's objectives. The Army Forces (ARFOR) Commander in the Pacific relies heavily on the 5th BCD to ensure all requirements are

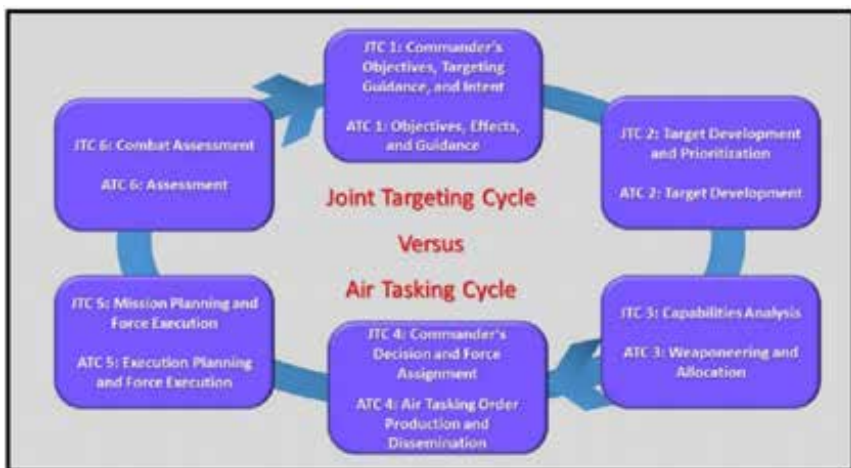


Figure 1

translated and represented in the AOC, and the ARFOR's scheme of fires (SoF), scheme of maneuver (SoM), commander's intent, and guidance are also represented timely and accurately to the TJFACC and JFC.

In the USINDOPACOM AOR, the 5th BCD serves as the senior liaison from the Theater Joint Force Land Component Commander (TJFLCC) to the TJFACC. The 5th BCD is uniquely positioned in the 613th AOC as the land component's advocate for equities with regards to targeting. Despite the fact that 5th BCD is fully integrated into the 613th AOC, 5th BCD cannot represent the TJFLCC within certain areas, specifically cyberspace, space, EW, and IO. The same compounding issue resonates within the other component liaisons as well. 5th BCD's modification table of organization and equipment (MTOE) aligns with all of the 613th AOC divisions with the exception of the specialty and support teams that process the majority of non-kinetic effects requests. However, the 5th BCD has submitted an MTOE change that addresses the ever increasing demand for cyberspace, space, EW, and IO personnel in order to address critical gaps within the organization. Until these critical gaps are filled, the integration, synchronization, and deconfliction of those capabilities resides with one person within 5th BCD – the 131A Targeting Officer. Therefore, the targeting officer becomes the “single point of failure” for the ARFOR with regards to integrating, synchronizing, and deconflicting cyberspace, space, EW, and IO unless augmentation is provided to 5th BCD. This problem set is not limited to 5th BCD, but encompasses all six BCDs (four active and two National Guard).

Another limiting factor can be summed up by one word – interoperability. Most of the service components are unable to interface their mission command systems into Theater Battle Management Core System (TBMCS), which provides a systematic connection for all information to flow horizontally thereby creating the current operations picture (COP) / current intelligence picture (CIP). The service components have their own distinctive culture, as well as systems that do not communicate with each other, thus forming the foundation to a “stove-piped approach” to joint targeting. One of the six principles of mission command outlined in Army Doctrine Publication (ADP) 6-0 is to “create shared understanding.” Army doctrine of mission command states that “a defining

challenge for commanders and staffs is creating shared understanding of their operational environment, their operation's purpose, its problems, and approaches to solving them.” The Army is infamous for producing COPs on systems that are not utilized by the rest of the joint force (i.e. Command Post of the Future (CPOF), Enhanced Common Operating Picture (ECOP), Command Post Computing Environment (CPCE), etc), which further promotes accounts of mass centralization.

Within the USINDOPACOM AOR, CPCE is the primary means for the TJFLCC to produce a COP and promote shared understanding. CPCE is not a joint COP of record. The only joint COP of record is Global Command and Control System – Joint (GCCS-J). CPCE does not feed GCCS-J properly despite having been designed to do so. CPCE is nested with Google Chrome, which is not part of every service component's Secret Internet Protocol Network (SIPRNet) baseline image. To this point, Google Chrome is not part of 613th AOC's baseline. Therefore, 5th BCD must request that Google Chrome be installed by Air Force information assurance personnel, as well as submit specific firewall exemptions that normally takes 90 days or more to process. Another compounding issue is that CPCE has not been tested to provide a COP over a wide area network (WAN). Thus far, CPCE has operated over a local area network (LAN). It has been successful during previous exercises because all participants were utilizing Multinational Information Sharing (MNIS) network. MNIS is one network that is geographically located within the TJFLCC's foot-print which all stakeholders have direct access to the server. CPCE has not been tested to demonstrate that a unit geographically separated from the TJFLCC can access data across other service components networks, thereby degrading shared understanding amongst the targeting enterprise.

Consequently, the lack of shared understanding contributes to the inability to efficiently answer a simple question asked by decision makers at all levels – “What should we do?” This question, although seemingly minor, is the predecessor to a plethora of significant decisions to come. Although the Air Force may move away from TBMCS to other options, such as Kessel Run, the Army has an obligation to ensure operations conducted by the land component are visible by the joint force. Each service component must improve upon the horizontal and vertical automated

dissemination of the Joint COP /CIP to promote shared understanding.

Multi-Domain Task Force (MDTF) vs the Air Operations Directive (AOD) and ATO

The addition of the MDTF and its intelligence, information, cyberspace, EW, and space (I2CEWS) battalion adds yet another element of complexity to achieving joint targeting synergy. The mission of the MDTF is to protect friendly forces and critical nodes, and strike critical enemy assets with multi-domain fires to support the JFC's strategic objectives. The purpose of the MDTF is to create windows of advantage by neutralizing adversarial Anti-Access/Area Denial (A2/AD) capabilities. The MDTF integrates organic and joint counter air, counter fire, cyber, and space capabilities to hold an adversary at risk which facilitates freedom of action for the joint force. The command relationship between the MDTF and its higher headquarters (JFC, JFLCC, Joint Task Force (JTF) Commander, Joint Forces Maritime Commander (JFMCC), or a different subordinate command) will affect how target nominations are integrated and executed, as well as how the MDTF is employed to service targets.

Moreover, one of the challenges for integrating targets developed and / or nominated by the I2CEWS battalion into the ATO is that the majority of authorities required to implement the aforementioned capabilities reside at the National level. This means the approval process can potentially take weeks and will extend beyond the time required to add those non-kinetic effects into a daily ATO. This problem plagues, not only the MDTF, but the rest of the information related capabilities (IRC). Therefore, the MDTF and service components must integrate IRCs early in crisis to discern necessary authorities and permissions and provide time for planning, preparation, and execution. It is noteworthy to state that the planning and coordination of space and EW assets are directly synchronized with air.

The JFACC's written guidance to ensure air, space, EW, and cyberspace operations effectively support the JFC's objectives while retaining enough flexibility to adjust to the dynamics of the range and phases of military operations are authored within the AOD. The AOD also provides the JFC's operational objectives, tactical objectives, and tactical tasks in order to prioritize the respective components' target nominations to be submitted for inclusion into the draft

JIPTL. The AOD is published 96 hours prior to execution of the associated ATO.

The ATO is a method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. The ATO normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. This essentially informs the pilots which targets they are going to service, where to refuel, which munitions to carry, etc. The 5th BCD monitors the execution of the ATO, specifically in reference to land component kinetic targets, and requests re-attack of targets when the desired effect was not achieved. However, targets to be serviced by non-kinetic means are synchronized by the Non-Kinetic Duty Officer (NKDO) within the AOC. The NKDO is responsible for executing applicable portions of the ATO and making C2 decisions to ensure the commander's objectives and intent are satisfied. The NKDO closely coordinates with other members of the current operations division within the AOC and directly manages the employment of cyberspace, space and EW capabilities. Problems arise when targets circumvent the targeting process. This has become all too common with targets that are to be serviced by non-kinetic means.

Service components are aware of the target approval process but fail to understand the coordination portion of the process. More often than not, when integrating cyberspace, space and EW, service components do not coordinate those effects through the JFACC (despite the fact that the JFACC has been delegated multiple coordination authorities by the JFC as discussed earlier). For example, every joint exercise that has been conducted within the USINDOPACOM AOR over the past two years have not exercised the coordination process pertaining to the IRCs. Service components failed to submit cyberspace effects request forms (CERF), Space Service Requests (SSR), and / or Electronic Attack Request Forms (EARFs) to accompany those type of non-kinetic effects. Therefore, the respective liaisons within the AOC are not able to provide necessary information to the NKDO. The aforementioned request forms are necessary to properly integrate, synchronize and coordinate non-kinetic effects provided by national level assets throughout the

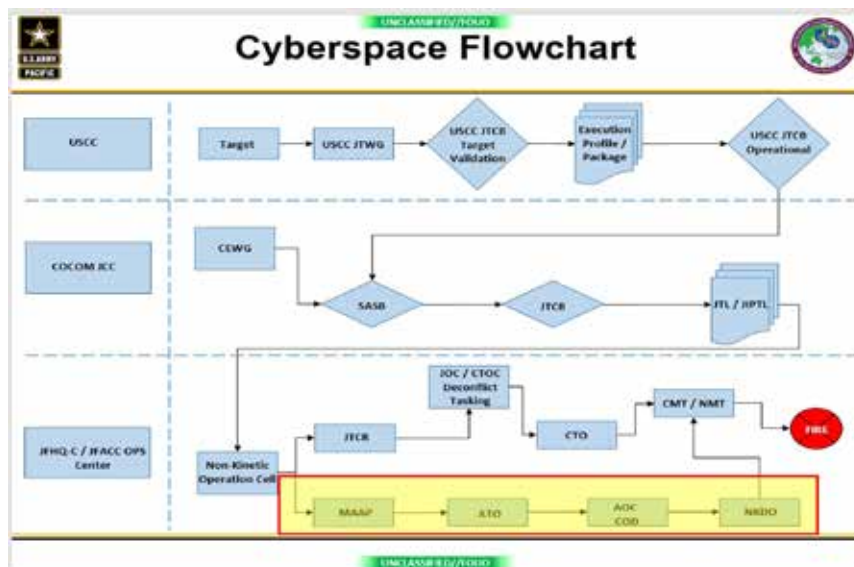


Figure 2

theater. Figure 2 depicts the cyberspace flow-chart and where the coordination takes place within the AOC. The same coordination is required for space and EW.

IRCs must be planned for and integrated early to obtain the necessary authorities and provide adequate time for preparation and execution within the JATC. The planning of non-kinetic operations should be no different from traditional kinetic engagements. However, target development for targets that are being considered for non-kinetic effects will take much longer as opposed to targets to be serviced kinetically. Target system analysis must not be conducted in hindsight. With regards to target development, it is elementary to develop and understand an adversary's integrated air defense system, but there is a certain degree of difficulty associated with developing the same adversary's telephony, computer, and industrial control systems. The flow between the physical, informational, and cognitive dimensions through tangible infrastructure and logic data nodes is very challenging. But nonetheless, integrating non-kinetic effects into each stage of the JATC is a challenge that all service components must undertake. It is required to facilitate joint targeting synergy.

Summary

Each service component must take a hard look at how we, the U.S. military as a whole, are conducting joint targeting and multi-domain operations. The U.S. military faces numerous challenges promoting joint targeting synergy. We must better address our "stove-pipe" approach to joint targeting within all domains. One of the most significant challenges is recognizing where the synchronizing of joint targeting happens, and how equities are systematically integrated into the Joint

Targeting Cycle (JTC). Joint targeting synergy hinges on the service components ability to liaise within the AOC and maintain reach back capabilities while fully participating in the boards, bureaus, centers, cells, and working groups (B2C2WG) with the component's priorities, equities, objectives, and effects represented throughout the JTC.

As the Army places emphasis on MDO, the BCDs will become even more critical to maximizing joint targeting synergy. Thus, within the USINDOPACOM AOR, the PACAF and USARPAC Commanders identified the importance and placement of critical skill sets required by

each service component to successfully confront an adversary in a future large-scale combat operation against a near-peer or peer adversary. Those skill sets are comprised of cyberspace technicians, EW officers and IO officers. These particular skill sets are needed in order to address critical gaps within the BCDs. Having submitted an MTOE change that addresses the critical demand for the aforementioned skill sets, 5th BCD will better align with 613th AOC's divisions, as well as the specialty and support teams that integrates and synchronizes non-kinetic effects on behalf of the JFC. In short, 5th BCD will be better postured to represent ARFOR's equities in all domains during MDO.

The service components, not only must master their craft, but also gain and maintain proficiency in leveraging joint and coalition capabilities across all domains simultaneously in order to win against a near-peer adversary in preparation for future conflicts. As a joint force, we must do a better job partnering with other services, as well as federated agencies, to improve upon our weaknesses and accentuate our strengths as a collective force – the basis of joint targeting. The partnerships that are forged with other service components, coalition nations and federated agencies will overcome the United States' loss of superiority or parity in certain domains. The technological advancements for integrating and synchronizing joint fires requires an equal evolution of tomorrow's military that will expeditiously apply them across all domains simultaneously. As part of a joint force, we must be able to provide other component's effects in their domains to overcome their operational challeng-

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AREA OF RESPONSIBILITY



es. This means change must focus on greater ability to have cross-domain effects and more seamless and effective integration across joint forces. There is no better place to perform the critical tasks of integrating and synchronizing joint fires and promoting joint targeting synergy than the AOC.

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TRAINING BLAST FROM THE PAST:

FA ON TARGET IN THE STORM



By Major General Fred F. Marty

The Field Artillery School (FAS) devoted the October 1991 Field Artillery magazine to DESERT STORM and the smashing Coalition battlefield victory over Iraq's army the previous February. MG Fred Marty (1942-2013), then the FAS Commandant, concisely summed up the fundamental lesson that Redlegs could take from DESERT STORM: "Not since World War II has fire support in general and FA in particular proved such a major force for the combined-arms team." As the Army today transitions from a counterinsurgency (COIN) to a large scale combat operations (LSCO)-focus, DESERT STORM, the most recent campaign in which the Army deployed two full corps (XVIII Airborne Corps and VII Corps) in line to conduct unified ground operations, surely is worthy of detailed study and analysis. Although much has changed in the twenty-eight years since 1991, MG Marty's introductory essay suggests that the central and enabling principles of the FA enterprise have remained the same: adherence to doctrine; realistic training; effective and efficient employment of new technologies; and exemplary leadership at all echelons.

-- Foreword by Dr. John Grenier, U.S. Army Field Artillery School Historian

Operation Desert Storm feedback and observations continue to filter into the Field Artillery (FA) School here at Fort Sill. But one fact already is abundantly clear: fire support played a dominant role in Desert Storm. During a six month period, Total Army FA forces deployed to Southwest Asia to support American and coalition maneuver forces—the largest contingent of US artillery since World War II. Our artillery force consisted of 43 cannon, rocket and missile battalions organized into seven division artilleries and seven FA brigades. Two corps artillery headquarters provided overall command and control. The units came from both heavy and light forces, from the continental US and Germany and from the Active and Reserve Components. Our National Guard FA brigades were the only large Reserve Component combat units to see action in the Kuwaiti Theater of Operations. The result was timely and devastating massed fires both before and after the ground war started.

Doctrine. Desert Storm confirmed our war-fighting thrust is on target: our fire support principles are sound and, most importantly, our doctrine, tested under fire, is effective.

Maneuver commanders and fire support coordinators (FSCOORDs) executed fire support doctrine and the

decide-detect-deliver methodology brilliantly during Desert Storm. The commanders expressed their intent for fires clearly, making the decide phase effective and efficient. Then, understanding the commanders' intent, FSCOORDs identified high-payoff targets, prioritized targets for engagement in the overall fire support effort and assured connectivity between sensors and shooters. These actions by senior leaders allowed fire support systems to engage enemy forces responsively and accurately.

In the detect phase, Redlegs integrated a multitude of organic and supporting platforms, complemented by national-and theater-level target acquisition assets. These assets included satellite imagery at the national level; US Air Force aircraft, such as the joint surveillance and target attack radar system

(JSTARS), at the theater level; and Firefinder radars, unmanned aerial vehicles (UAVs) and other organic systems at the division and corps levels. All were networked into fire support operations with our targeteers insightfully analyzing the information produced.

In the final phase, we delivered massed fires. Massed artillery fires provided the maneuver

“Not since World War II has Fire support in general and FA in particular proved such a major force for the combined-arms team.”

commander combat power at the time and place he needed it. This gave him overwhelming fire superiority and allowed him to maneuver to exploit the effects of fire.

Executing our counterfire doctrine in combat was another “first” for the FA. The Firefinders rapidly identified targets for counterfire and sent the data digitally or by voice to the shooters. Our cannon and multiple launch rocket system (MLRS) assets silenced the Iraqi artillery by delivering very “convincing” fires. In fact, Iraqi prisoners called MLRS dual-purpose improved conventional munition (DPICM) bomblets “Steel Rain”—the most terrifying threat they faced.

Training. Desert Storm proved our soldiers are the best trained in the world. Our young soldiers displayed confidence in themselves, their leaders and their equipment. Soldier confidence can be attributed to our rigorous, realistic training at the Combat Training Centers (CTCs). Each CTC provides soldiers and leaders the forum to hone their skills and integrate them into a truly combined-arms effort.

Modernization. The MLRS and Army tactical missile system (Army TACMS) both had their “baptism by fire” in Desert Storm. The launching of the first Army TACMS on January 18th ushered in the Arm’s new age of rocket and missile artillery. The devastating concentration of firepower of MLRS and Army TACMS made them invaluable combat multipliers for the maneuver forces. While MLRS struck the enemy’s artillery and command and control and logistical sites with massive volumes of DPICM sub-munitions, the Army TACMS destroyed deep targets well beyond the range of ground weapon systems. Commanders are unanimous in their praise for our rocket and missile firepower. The surgical, point-kill capability of the Copperhead projectile also was combat tested for the

first time. Despite the degrading effects of the desert on our laser designators, this point killer achieved its aim in the vast preponderance of more than 90 engagements.

Leader Development. In Desert Storm, the Army’s leader development process proved to be very effective from both the institutional and field perspectives. Our leaders displayed initiative, decisiveness, innovativeness and technical and tactical competence in employing their weapon systems and organizations.

Leaders at all levels showed remarkable flexibility. Senior leaders provided sound guidance to help maneuver commanders synchronize the battlefield. Junior officers and NCOs displayed fundamental leader skills and warfighting knowledge far beyond their years of experience.

Conclusion. Fire support was a decisive partner with maneuver in Southwest Asia. Not since World War II has fire support in general and the FA in particular proved such a major force for the combined-arms team.

Field Artillery—On Time, On Target!

Editor’s Note: This article originally ran in the October 1991 edition of the Field Artillery Journal:



US Army MLRS Circa 1991
Photo Credit: US Army

Long Range Precision Fires: One Year Later

By: Monica K. Guthrie, LRPF CFT

The last time the field artillery was properly updated was more than two decades ago - the same time that BG John Rafferty was a lieutenant attending the field artillery officer basic course. Now as the Long Range Precision Fires Cross Functional Team director, Rafferty has the responsibility of developing the future of field artillery.

“Twenty five-twenty six years went by and we hadn’t modernized our self-propelled field artillery force,” said Rafferty. “The rest of the world was watching. They learned how we fight, they learned what our advantages are, and our adversaries have invested in technologies and capabilities that offset our advantages - specifically our adversaries have invested in long range artillery systems, long range coastal defenses and very sophisticated air defenses.”

Those capabilities combined creates layered standoff, meaning they can hold the United States Army at arm’s reach, threatening Navy ships and even the most advanced Air Force aircraft, preventing the U.S. military from even getting into the fight. Long Range Precision Fires becomes an important investment for the Army to offset that advantage by creating “windows of opportunity,” said Rafferty.

“With Long Range Precision Fires as the number one priority we’re in a very aggressive modernization period to make sure that we stay the best army in the world,” he said.

The LRPF team has been in operation for more than a year, focusing its efforts on three areas - the tactical, operational, and strategic levels.

TACTICAL – The boots on the ground

The focus of LRPF at the tactical level has been the development of the Extended Range Cannon Artillery. In addition to being able to increase the capabilities of its predecessor, the Paladin and the Paladin Integrated Management (PIM), ERCA must also do so while still maintaining its ability to be mobile (hence, the tactical – moves with the Soldiers) and increasing range. The mission becomes a balancing act between creating an extended tube, upgrading the body, designing a propellant, all while receiving what the cross

functional teams call “Soldier touchpoints” – feedback on how to improve the equipment as they are making it. As of Nov. 8, 2019, the ERCA prototype was in its final assembly at Picatinny Arsenal in New Jersey, and preparing for transport to Yuma Proving Grounds, where it will undergo additional testing before participating in its technology readiness level 6 demonstration.

“It’s a complicated way to say that’s when we demonstrate the capability of the platform and turn it over from the science and technology community to the acquisition community so we can start building more prototypes,” said Rafferty. “There are a lot of pieces that have to be put together before we deliver this capability. But getting the platform out there in the next couple of weeks is a significant thing.”

OPERATIONAL – Division and Corps

At the operational level the LRPF team has been developing the Precision Strike Missile. Unlike ERCA, the PrSM is designed for use from an existing platform. The High Mobility Artillery Rocket System and Multiple Launch Rocket System will fire the new missile which will increase the number of missiles fired by putting two missiles per pod, vs the original one missile per pod for the ATCMS (Army Tactical Missile System).

The two industry partners competing in this race are Raytheon and Lockheed, both of which are scheduled to test first their first prototype before the end of the year.

STRATEGIC – Long Distance

The Strategic Long Range Cannon is a science and technology effort to demonstrate lethal effects at strategic ranges to compliment current and projected long range fires capabilities. Technical progress as well as operational utility and affordability will be assessed at project milestones culminating with a demonstration in 2023.

TEAMWORK

In addition to leading the modernization effort, the LRPF team strives to assist the various organizations work together more closely. With projects developed in Huntsville, Ala., Picatinny Arsenal in N.J., and Detroit Arsenal, Mich.,

members of the LRPF team must liaison with multiple moving parts, while leading them to a common goal.

“We’re separated by, in some cases, thousands of miles and with the cross functional team, the ‘team’ part of that is very important,” said Rafferty. “These are all different organizations that all have different bosses, but we are unified by a purpose and our purpose is to deliver this capability to our army as quickly as we can.”

The LRPF teams works closely with the Futures and Concepts Center, in Fort Eustis, Va., but also the Field Artillery concepts team (Training and Doctrine Command Capability Managers) at Fort Sill, just across the street from the LRPF headquarters.

“We work very closely with them to ensure the capabilities we are developing are just that – capabilities - not just a material solution,” said Rafferty. “Delivering a capability is more than just the material solution, it’s the doctrine, the

organization, the training the leader development the facilities all of that goes into delivering a capability short of just the material solution.

The development of all the facets of these capabilities is occurring simultaneously and not necessarily in a linear fashion (one after the other). The intent is that by maturing the doctrine, organization, material, and others concurrently, the development will occur more rapidly.

“We’re not skipping steps we’re just doing things in a different more collaborative manner to arrive at an outcome faster,” said Rafferty. “All our processes are entirely logical and well thought out but perfected for an industrial age army. In the information age we know that we have to work more quickly, we can’t spend 10 years perfecting a technology before we deliver to the field. It’s obsolete by the time you get there so we’ve got to move more quickly in the information age to deliver a capability.”



UPDATE: 2019-*FA Journal* is Back!

In 2015, branch proponentcy was returned to the Commandants. In accordance with AR 25-30, branch proponents are authorized to establish their own professional bulletins. BG Steve Smith, the current FA Commandant, and chief of the Field Artillery has re-established the Field Artillery Bulletin. Your professional publication is back. We are reprinting *History of the Field Artillery Magazine* to provide context for our members to appreciate the history of the FA Journal and understand the original intent and purpose of our professional publication.

As the subtitle of this article mentions; the FA Journal is *“Pointing the way to the future.”* This is an exciting period in time for our beloved branch. The Joint force and national security strategy are focused on preparing to fight near peer threats. Fighting in large scale combat operations (LSCO) requires massed artillery and artillerymen proficient in their core skill sets. The King of Battle will be expected to deliver when called upon. As we introduce new weapons systems (ERCA, PRSM, strategic long range cannon); how do we employ them? Fire support coordination becomes more complex in multi-domain operations. Airspace is becoming more congested. Are we organized and equipped to integrate and synchronize across all domains effectively?

Are DIVARTYs structured appropriately and should BCTs retain direct support field artillery battalions? In MG(R) Marty’s article reviewing Operations in Desert Storm, he mentioned the awesome task of synchronizing 43 artillery battalions. Are we capable of doing that same task today with a multi-national force?

The Field Artillery journal is a depository for field artillery professionals to share their thoughts on improving the branch. Retaining the title of “King” is not easy. It requires us to be critical of ourselves, the way we organize, and the way we fight. Our views and ideas may not be popular with our leadership, but criticism and recommendations based in fact may be necessary for us to grow and prosper.

We strongly encourage all Field Artillerymen to write, dialogue, and debate in the confines of the FA Journal. Your professional association wants to assist you in any way possible. Supplemented with the association’s social media channels, and a new podcast launching in JAN 2020, the USFAA is poised and ready to serve the next generation of Field Artillerymen. All contributing authors to the FA Journal will receive the Field Artillery Order of the Red Quill. New writing awards are being introduced. This issue introduces the LtCol Michael D. Grice writing award asking our members to challenge the status quo by answering the question, What can we, as artillerymen, do better?” We look forward to hearing from you and publishing your thought provoking articles.



“In many situations that seemed desperate, the artillery has been a most vital factor”

-General Douglas MacArthur
The Field Artillery Journal, 1942

History of FIELD ARTILLERY Magazine:



Pointing the Way to the Future

*The following is the history of the professional magazine for Army and Marine Field Artillerymen from the first edition, January-March 1911, to this final March-April 2007 edition. The article is written in two overlapping parts: (1.) 1911 through 1987 taken from information written by then Major David T. Zabecki for the Military Periodicals: United States and Selected International Journals and Newspapers published by Greenwood Press in 1990.¹ and (2.) 1987 through 2007 by Patrecia Slayden Hollis, Managing Editor from 1987 to 1995 and Editor from 1995 to the present. *Originally appeared in the March-April 2007 issue*

The first edition of the current *Field Artillery*, subtitled *A Joint Magazine for US Field Artillerymen*, was January-March 1911 under the title *The Field Artillery Journal*, affectionately referred to as "*FAJ*." The publication and parent organization, the US Army Field Artillery Association (USAFAA), were the consequences of the Artillery Reorganization Act of 1907, which split the US Army's Artillery into the separate branches of Field Artillery and Coast Artillery. Both the association and the *FAJ* were the idea of Captain (later Major General) William J. Snow, who saw a need for some vehicle through which the relatively tiny new branch (only 180 active-duty officers) could develop an identity.

The new association and its journal had three main purposes: to disseminate "professional knowledge," promote "a feeling of interdependence among the different arms and of hearty cooperation by all" and "promote understanding between the regular and militia forces."² These purposes remain in the final edition as printed on the inside front cover of this magazine.

The second purpose-what currently is known as "combined arms" thinking-was fairly progressive for its day. But it was in the third purpose that *FAJ* was a real leader. Relations between Active and Reserve Components of the Army were shaky, at best, prior to World War I. The efforts of the *FAJ* to include

militia participation broke new ground and resulted in favorable comment from other branch association journals.³

The first issue of the 1911 *FAJ* had Snow as the editor. Although only one of the articles in that edition carried his byline, he personally wrote all but two.⁴ Between 1911 and 1950, *FAJ* had 19 editors, all but two of whom held the position on a part-time basis. (See the figure 1.) Some only served for a few months, but the average tenure during that time was about three years.

Vision for the Future. The early editions of *FAJ* were influenced heavily by French thought. Quite often, articles translated from French journals outnumbered pieces from American contributors. Prior to World War I, translated German articles also were used heavily.

Throughout the interwar years, *FAJ* had a fair degree of impact on contemporary military thinking. In October 1918, Snow, by then a major general and Chief of Field Artillery, published a retrospective on American Field Artillery operations during the Great War that proved to be truly visionary in its projection of future warfare.

Bucking the traditional wisdom of the day, Snow maintained that the trench warfare of World War I had been a temporary aberration and that "open warfare" would characterize the conflicts of



of the future. For that reason, he concluded, Field Artillery training would continue to be geared toward supporting maneuver rather than static warfare.⁵

Two other articles also appeared in the interwar years that were significant for what was said as well as the fact that their authors would turn out to be major leaders in World War II. In 1937, Brigadier General Lesley J. McNair published an article on the newly emerging military applications of the helicopter.⁶ And in 1941, Major Albert C. Wedemeyer presented an interesting article on antitank warfare. In his article published in the May 1941 edition, Wedemeyer, an Infantryman, stated, "The best defense against the lightning-like, destructive blows associated with modern warfare is the offense. Therefore, tanks and planes, with their recognized offensive powers, are the most effective means against armored forces and air units."⁷

Although the early *FAJ* accepted private advertising to defray costs, this was stopped by Congress in 1931, forcing the USAFAA to depend primarily on subscriptions and the sale of books, etc., for *FAJ* funding.⁸

FAJ's most important contributor was retired Redleg Colonel Conrad H. Lanza. Between 1921 and 1950, Lanza published 89 articles in *FAJ*. Most of them were historical or analyses of the current campaigns of World War II.

Starting in May 1942, Lanza also wrote a regular feature titled "Perimeters in Paragraphs." The column commented on significant diplomatic developments, summarized current military operations and occasionally made predictions. "Perimeters in Paragraphs" attracted a fair amount of attention during the World War II years.

For example, Hanson W Baldwin of the New York Times quoted Lanza in his column in the 4 December 1942 issue.

During World War II, *FAJ* was a central vehicle in what would become a high point in Soviet-American military cooperation. The November 1942 edition carried an article on antitank warfare written by Soviet Major General N. Gavrilenko. The article was written exclusively for *FAJ* through the cooperation of the Soviet embassy and transmitted from Moscow by radio. It was only the first of several such efforts. Between 1942 and 1946, 29 articles by Soviet authors appeared in the pages of *FAJ*.

FAJ's Russian connection came to an abrupt halt in 1947, however, when Soviet Deputy Foreign Minister Andrei Vishinsky branded the magazine as a "warmonger."

Field Artillery Editors. This list is from the first edition, January-March 1911, until the last 2007 Print edition.

Editor	Start Date	End Date
CPT William M. Snow	Jan 1911	Jun 1911
CPT Oliver L. Spaulding	Jul 1911	Dec 1912
CPT Louis T. Boiseau	Jan 1913	Jun 1914
CPT Marlborough Churchill	Jul 1914	Dec 1915
CPT John Nesmith Greely	Jan 1916	Feb 1916
LTC Dwight E. Aultman	Mar 1916	Mar 1917
COL Clarence Deems, Jr.	Apr 1917	Sep 1917
MAJ Claude B. Thummel	Oct 1917	Dec 1917
LTC Arthur F. Cassels	Jan 1918	Dec 1922
MAJ T. Worthington Hollyday	Jan 1923	Feb 1923
MAJ William C. Houghton	Mar 1923	Jun 1926
MAJ Harleigh Parkhurst	Jul 1926	Sep 1928
MAJ John M. Eager	Oct 1928	Dec 1931
MAJ Dean Hudnutt	Jan 1932	Sep 1936
CPT Michael V. Gannon	Oct 1936	Sep 1939
LTC Wilbur S. Nye	Oct 1939	Jun 1942
LTC John E. Coleman	Jul 1942	Dec 1945
COL Devere Armstrong	Jan 1946	Nov 1947
COL Brekinridge A. Day	Dec 1947	Jun 1950
MAJ Alan A. Word	Jun 1973	May 1976
LTC William A. Cauthen, Jr.	May 1976	May 1979
MAJ John R. Dobbs	Jun 1979	Oct 1982
MAJ Terence M. Freeman	Oct 1982	Jul 1984
MAJ Roger A. Rains	Jul 1984	Mar 1987
CPT Suzanne W. Voigt*	Mar 1987	Jul 1987
MAJ Charles W. Pope, Jr.	Jul 1987	Aug 1990
LTC Colin K. Dunn	Sep 1990	May 1992
LTC Jerry C. Hill	Jul 1992	May 1993
Patrecia Slayden Hollis*	Jun 1993	Sep 1993
LTC Robert M. Hill	Oct 1993	Dec 1994
Patrecia Slayden Hollis*	Jan 1995	Mar 1995
Patrecia Slayden Hollis	Apr 1995	Apr 2007

*Acting Editor

A lead story in the 23 October 1947 issue of the New York Times explained that the attack on *FAJ* "was occasioned by an article regarding tactical exercises that did not name a possible enemy but gave Russian names to the cities involved."

FAJ subscriptions that had stagnated around 2,000 from 1920 through 1936 jumped to 3,000 in 1938 and 4,400 in 1940.² *FAJ* reached its all-time high circulation of 19,200 in 1943; but with the end of the war, circulation dropped off to only 5,000 by 1948.

Giving Birth to Army Magazine. In the late 1940s, there was a movement within the Army to eliminate internal bickering among the branches by merging the branch associations. Such an "all-Army" organization would present a united Army voice in an ambiguous era heralded by armed forces "unification." Moreover, this new body would publish a single ground combat journal using its pooled resources to support a full-time civilian staff.

The last edition of the original run of *The Field Artillery Journal* published by the USAFAA came in May 1950. The Field Artillery and Infantry Associations merged to form the Association of the United States Army (AUSA), and that body began publishing its monthly journal in August 1950. The new publication was called *Combat Forces Journal (CFJ)*, and its logo carried the subtitles *Infantry Journal* and *Field Artillery Journal*. It was presented as a continuation of those two magazines, and the initial full-time staff came from both of the predecessor publications.

The Honorable Harry S. Truman, the President of the US, was the Honorary President of AUSA. As a Field Artilleryman and Reserve colonel in the branch, he had been the Honorary President of the Field Artillery Association for several years.

The early editions of *CFJ* were a blend of its two branch predecessors with many of the regular contributors of the earlier journals continuing to present the same types of articles. Colonel Lanza continued his regular feature with the title changed to "World Perimeters."

Gradually, however, the scope of the new journal broadened, and the number of articles that related specifically to either the Infantry or the Field Artillery decreased. Then in 1954, *CFJ* dropped the *Infantry Journal* and *Field Artillery Journal* subtitles from its logo, and a few months later, its title was changed to *Army*. Meanwhile, all Army Artillery had

been merged back into a single branch at the end of 1950.

Rebirth of the Journal. The rebirth of the magazine was a long and slow process. In 1957, the US Army Artillery and Missile School at Fort Sill, Oklahoma, started issuing a house-publication. By the fourth edition of the *Tactical and Technical Trends in Artillery for Instruction* issued in October 1958, the name was changed to *Artillery Trends* and remained so for 39 editions.

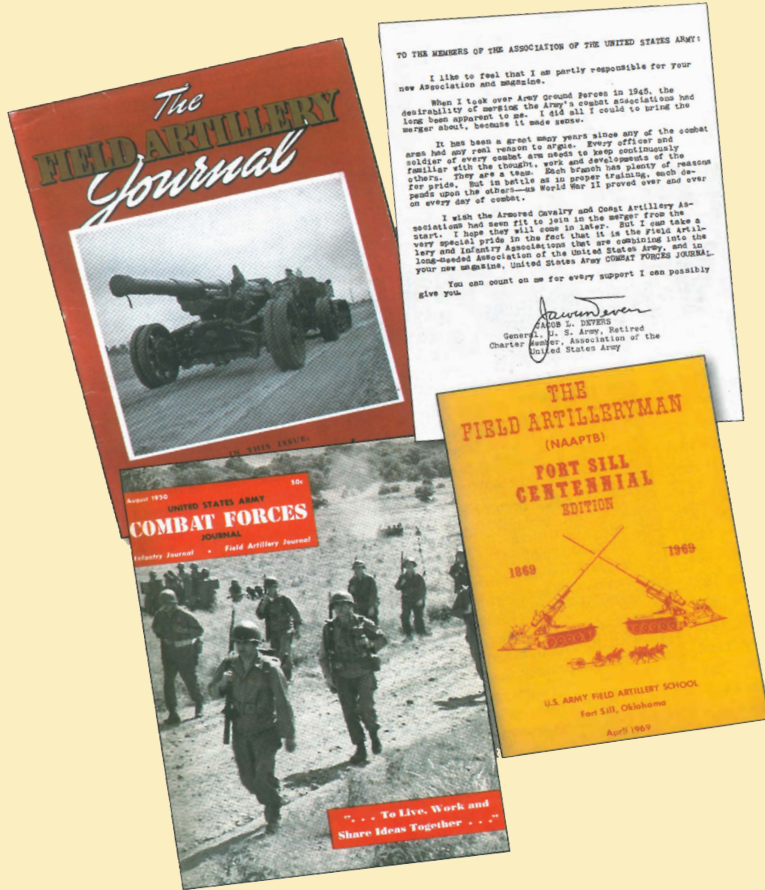
The name then changed to *The Field Artilleryman* in the April 1969 edition after the Army Artillery once more split into the separate branches of Field Artillery and Air Defense Artillery. In January of that year, the school had changed its name from the US Army Artillery and Missile School to the US Army Field Artillery School. The school printed eight editions of *The Field Artilleryman* as an "instructional aid, published whenever sufficient material is available." Between 1957 and 1972, the school published 50 editions.

Throughout the late 1960s, most of the Army's branch schools had been pressing the Department of the Army (DA) for permission to publish branch periodicals on a regular basis. In 1972, DA finally gave permission. The last edition of *The Field Artilleryman* carried an appeal from Brigadier General Robert J. Koch, Assistant Commandant at Fort Sill, asking for reader support for a new Field Artillery professional journal.¹⁰

The first edition of the restructured *Field Artillery Journal* came out in July 1973 under the editorship of Major Alan A. Word. The revived publication picked up the numbering sequence from the old *FAJ* with Volume 41.

The first edition carried an article by Historian Fairfax Downey that provided an additional bit of continuity with the old *FAJ*. The main difference between the old and new journals was that the latter was an official Department of Defense publication rather than an association's magazine. The new *Field Artillery Journal* also had a full-time military editor and a small staff of civilian Army employees.

In his opening editorial, Word said he intended to publish the *Field Artillery Journal* "under the forum concept."¹¹ He and subsequent editors have stressed that *FAJ* was not an official voice of the Field Artillery School, although information from the school was an important part of most editions. Every editor since the rebirth has urged participation from the readership.



The new *Field Artillery Journal* carried over two key themes from *FAJ*: the continual stress on combined arms thinking and aggressive efforts to include the reserve components. The importance of this latter point is all too critical under the force structure of the times where more than 50 percent of the Field Artillery was either in the National Guard or Reserve.

In 1974, the Field Artillery Association was also revived as the Field Artillery Historical Association. Then in 1980, it became the US Field Artillery Association (USFAA), dropping the word "Army" from its name in recognition of its Marine Corps Field Artillery members.

Although the association was no longer the parent body of the *Field Artillery Journal*, a close tie continued to exist in the person of the editor, who also served as the association's executive director. USFAA bought copies of the government's printing of the *Field Artillery Journal* for its members. It took some time before the *Field Artillery Journal* evolved into the "forum" its editors envisioned. Occasionally there were criticisms from readers that the *Field Artillery Journal* was "an excellent info sheet but no forum."¹² Editors Major John R. Dobbs and Major Terrence M. Freeman slowly expanded the Letters-to-the-Editor section by printing some

of the the shorter and more thoughtful articles as letters instead. Although this angered some contributors who felt their efforts were downgraded when printed as letters, the foundations of an effective forum did develop.

Changes in the Magazine. By the end of 1986, the *Field Artillery Journal* was facing its old nemesis, the government budget ax once again. It was one of 41 publications recommended for elimination by the Army Publications Review Committee. The Commanding General of the Army Training and Doctrine Command (TRADOC), however, decided to let the branch magazines survive in the "more economical bulletin format." Starting with the August 1987 edition, the *Field Artillery Journal* made changes to comply with the TRADOC regulations for funding by the Deputy Chief of Staff for Doctrine.

The magazine became *Field Artillery* with the subtitle of *A Professional Bulletin for Redlegs* and eliminated all information that was purely editorial, public relations or personality profiles (in the latter, except for people of historical significance) and made other changes. Most of the changes were to make the magazine cheaper for the Army to publish, such as limiting the use of coated paper, color, photographs, etc. (In the early 2000s, the various branch bulletin editors slowly reinstated all the economical changes as technological



"The Cocky Field Artillerymen." This famous Civil War photo of a group of Yankee Artillery officers standing in cocky positions around an M1861 three-inch Ordnance Gun was taken by James F. Gibson near Fair Oaks, Virginia, in June 1862. It was used in the front cover logos of the magazine, starting with the September-October 1979 *Field Artillery Journal* and ending with the January-February 1996 *Field Artillery*.

advances in desktop publishing software and printing made the additional costs of printing, say, photographs, inconsequential and covers limited to black and white with one additional color, internationally antiquated.)

One change that TRADOC directed was a standard professional bulletin (PB) numbering system, which remains today. The system changed from *FAJ*'s volumes and numbers to (on the front cover of this magazine) "PB6-07-2," which stands for "Professional Bulletin 6" (the FA's designated number); the year (2007); the number of the edition for that year (2).

In the 1980s, many *Field Artillery Journal* articles dealt with the problems derived from rapidly evolving technology and its impact on military doctrine, a trend that continued with *Field Artillery*. To support the AirLand Battle warfighting doctrine, Artillery thinking had to shift from the traditional mission of massing fires over a wide front to shooting deep to extend the depth of the battlefield.

In addition, the new doctrine called for mobile armored warfare to move rapidly to outflank the enemy and (or) take advantage of his vulnerabilities. The magazine published a controversial article in 1988 that was co-authored by then Lieutenant General Crosbie E. Saint, the III Corps commander, and then published an interview with him later that year. In both pieces, General Saint advocated the FA be capable of moving rapidly with the lead elements of the armored strike force to destroy the enemy. This flew in the face of the FA School's concept that the FA should remain relatively stationary and support the maneuver forces with fires massed where the maneuver commander wanted them.

Once again, *Field Artillery* pointed the way to the future. Less than three years later in March 1991, the FA moved with the lead elements of rapidly moving maneuver formations to outflank and surprise the Iraqi forces during Operation Desert Storm (ODS)-the wartime application of AirLand Battle.

The 72-page September-October 1991 edition had the theme of "Redlegs in the Gulf," and was the first of the Army branch magazines to chronicle the events of ODS in detail in an entire edition. The magazine was in print just 5 months



after the March 1991 war. *Field Artillery*'s being the first of the branch magazines to chronicle the war in an entire edition would repeat itself for Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF).

Theme Editions. In 1985 under Major Roger A. Rains, editor of the *Field Artillery Journal*, and then continued by Major Charles W. Pope, editor of *Field Artillery*, the magazine moved to a theme issue concept. Each edition concentrated (although not exclusively) on a topic, such as counterfire, the FA and combat service support, and massing fires.

The earlier themes tended to cover FA firing operations and the desired effects. Then as time progressed the themes moved more into covering fires in joint and

combined operations, digitizing the force, other new technologies and, finally in the early 2000s, into nonlethal effects and stability operations.

The September-October 2002 magazine focused on Operation Anaconda in Afghanistan, the first major military operation of the Global War on Terrorism (GWOT). In a highly controversial interview, the commanding general of forces in Operation Anaconda, then Major General Franklin L. Hagenbeck, criticized the Air Force for the quantity and timeliness of the Air Force's close air support (CAS). The controversy brought the magazine considerable international media attention and the Air Force and Army to the table to fix major problems with CAS rapidly before OIF.

After the interview and other controversial articles on Operation Anaconda were published in 2002, the magazine gained a wider Air Force readership that noted the fire support aspects of the Field Artillery's mission for the ground forces in OEF and OIF. Also, significantly more articles by Air Force authors began appearing in the magazine—articles on providing ground forces airpower especially CAS.

Throughout the editions in the late 1990s and early 2000s, the magazine's sub-themes were related to killing the enemy deep to keep from having to kill him up close, developing fire support capabilities to kill targets reliably in the close fight and prosecuting integrated joint operations. Once again, the FA developments and magazine discussions held the branch in good stead for combat, this time in Iraq. At the beginning of OIF, Field Artillerymen helped the Air Force prep the battlefield deep before Coalition Forces crossed the line of departure, firing more than 400 Army tactical missile systems (ATACMS), including some ATACMS unitary missiles, the first FA precision-guided munitions (PGMs) fired in combat. Field Artillerymen also provided close fires while moving rapidly with the lead elements of the ground forces.

The theme approach ended in 2004 when Patrecia Slayden Hollis, the magazine's only civilian editor, stopped the practice to focus all editions on OIF and OEF for the nation at war.

Hollis was the second woman editor (the first's being Captain Suzanne W. Voigt who was the

Acting Editor for four months in 1987) and the longest serving editor of the magazine. Hollis was the editor for more than 12 years, from 1995 through the last edition in 2007. Prior to her editorship, the longest serving editor had been Major Dean Hudnutt, who was the editor for three years and nine months from 1932 to 1936.

The Red Book. From 1986 until 2000, the last edition of each year was called "The Red Book," an annual report of the state of the American Field Artillery, which included unit reports, maps of joint FA units worldwide and other reference information. It was similar in concept and format to Army's annual "Green Book."

With the 1987 edition under Editor Pope, the Red Book changed from an annual report for only Army Field Artillery active duty officers to a more inclusive report for Army and Marine Corps Field Artillery officers, NCOs and enlisted men, both Active and Reserve Components. This continued the magazine's tradition of including its Reserve Components and endorsed the branch's joint partners, the Marine Field Artillerymen.

With the 1998 Red Book state-of-the-branch article, the vision for Field Artillery gave voice to the focus on joint operations with munitions centrality, the age of effects, digital connectivity and deep fires. These concepts laid the groundwork for the development of systems and employment concepts for OIF.

After the 2000 November-December edition, the Red Book was published every other year. Even in the odd years in which the Red Book was not published, the Chiefs of Field Artillery continued to publish annual state-of-the-branch articles.

By the 2006 Red Book, the Army had imposed so many operational security (OPSEC) publication restrictions due to OEF and OIF (not allowing the magazine to publish the commander's list or unit reports) that the Red Book became a mere token, of previous Red Books.

History Writing Contest. The magazine also reflected the renaissance in military history in the US Army. From 1986 through 2003, roughly 15 percent of the articles were historical with the emphasis on "lessons learned" that apply today.

During that time, the USFAA sponsored an annual history writing contest run by the magazine staff. Two of the history contest winners won the prestigious Army Historical Foundation's national award for Best Army Professional Journal History Articles for 1998 and 2001; in addition, the foundation selected several other USFAA history writing contest winners as finalists over the years.¹³

Then in 2004, Hollis temporarily suspended the contest due to lack of participation. From 1986 through 2003, authors had supported the annual contests with multiple entries. However by 2004, as the articles and interviews indicated, a large part of the Army and Marine Corps Field Artillerymen were deployed, recovering from a deployment or preoccupied with preparing to deploy again for OIF or OEF, which limited their participation in the contest.

Interviews-National and International.

From 1987 through 2006, the magazine published frequent interviews with senior Army, joint and allied leaders; also, several junior NCOs were interviewed for the series "A Soldier's Story." More than 90 interviews were published in *Field Artillery* during that time, the vast majority of which were conducted by Managing Editor and then Editor Hollis. During that time, the focus was on the magazine's providing "something for everyone" with the readership target of E6 though general officer.

Although the interviews covered FA operations and developments, the interviewees discussed them within the broader context of overall Army, joint and combined operations, including ODS, OIF and OEF, drawing a broader audience. As a consequence, the interviews often were quoted or reprinted in manuscripts and other magazines or publications, such as the Pentagon's *Early Bird*, and used extensively in research.

Dual Magazines: *Field Artillery* and the *FA Journal*. In the early 1990s, Congress passed an ethics in government law limiting, among other things, private organizations from benefiting from government contracts or activities-separating "church and state." This had a great impact on the magazine and the association.

The law spelled out strict rules for "conflicts of interest," which restricted the active duty editor

from also serving as the Executive Director of the association and caused the Chief of Field Artillery to maintain his distance from the association. During that time, the USFAA replaced its active duty military board members with retirees.

In 1996, the final legally driven separation of the government's magazine staff and the private Field Artillery Association came with the March-April edition. With that edition, the association discontinued buying copies of *Field Artillery* from the government and started printing a separate version of the magazine for its members, called the *FA Journal*, subtitled *A Professional Journal for Redlegs*. The professional content of the *FA Journal* was a reprint of *Field Artillery* (provided by the government magazine staff to the association on CD); the *FA Journal* also included commercial advertising and association news. The new magazine sported full-color covers and heavier coated paper with a crisper printing of photographs and art-all prohibited by the Army in the name of economy. By 1998, the circulation of *Field Artillery* and the association's *FA Journal* was about 15,000 per edition, with each providing half.

The November-December 2003 edition of *Field Artillery* moved into full recognition of the joint nature of the magazine. Hollis changed the subtitle of *Field Artillery* from *A Professional Bulletin for Redlegs* to *A Joint Magazine for US Field Artillerymen* on behalf of the Marine Field Artillerymen readers. About the same time frame, the USFAA changed the *FA Journal*'s subtitle to *A Joint Journal for US Field Artillerymen*. The titles remain through this last edition.

Keeping Up with Publishing Technology. *Field Artillery* has been innovative in its use of publishing technology. In 1992, Editor Colin K. Dunn moved the magazine away from camera-ready mechanicals (hard copy layout) to digital layout of the magazine, with the exception of photographs and some art that had to be developed and positioned by the print contractor.

Hollis continued the movement toward more advanced technology in publishing and distribution. By the May-June 1995 edition, the magazine was laid out entirely electronically with print contractor's receiving it on a CD.

Today, the printer receives the magazine in a pdf format that the magazine staff uploads electronically to their file transfer point (FTP); the edition is developed to allow the printer to go directly to the presses and output to film, skipping the plate-making stage of the printing process.

In the late 1990s, the magazine started an electronic home page with an archive of editions online from the latest edition back to those in 1959. Today, the magazine's home page has an archive of "Past Editions" back to 1959 that are searchable by a Google Mini device. By June 2007, the archive will have all editions online back to 1911.

Posting the magazine online led to new era of global coverage that continues today. As an example, an online article about the Battle of Fallujah that was printed in the March-April 2005 edition caught the eye of the anti-American media and provided "grist" for a 2006 international negative "spin" campaign. The media used one paragraph in the article as proof that the US had employed white phosphorous (WP) in the battle and decried erroneously that WP was a chemical weapon and banned internationally. Once again, the magazine came under the eye of a media storm with national and international queries-this time because of the media's distortion of information posted online.

Today, the print circulation of the dual magazines is about 12,000, with 7,600 free copies going to Army and Marine Corps Field Artillery units and various other US government agencies. The remaining 4,400 printed copies are distributed as part of the USFAA's membership benefits.

The 1980s magazine staff maintained an estimate of its "readership," basea on the limited numbers of printed copies going to units, libraries and other organizations and an assumption that the copies had more than one reader. With 90,000 copies printed in 1986, the staff calculated the magazine had a readership of about 250,000.

Today, it is more difficult to estimate the number of magazine readers. In spite of the fact that only 72,000 copies are printed, the magazine is online on its home page and in multiple research and reference databases. As one example, in the past five and one-half months, the magazine's home page has received an average of 238 "hits" per day-

some 42,400 readers in less than six months.

The Final Editions. During the 2000s, the magazine covered not only advances in technology, but also the changes to FA and Army units to become more modular and transform into a future combat system (FCS) force. In one breakthrough of technology, Field Artillery covered the FA's new PGMs and new software to support precise target location in its July-August 2006 edition. These PGMs and the supporting targeting software, including innovations in digital clearance of fires, are changing the face of kinetic effects in counterinsurgency operations in Iraq and Afghanistan, especially in the urban areas. Along with Air Force PGMs, ground force commanders now can access an unprecedented range of capabilities in precision kinetic effects, truly revolutionizing ground warfare.

Since OIF began in 2003, the magazine also has printed articles on Field Artillerymen serving in GWOT as motorized infantryman and commanders of motorized infantry task forces or brigades, as information operations (IO) and civil military operations (CMO) officers at the tactical levels, and as lethal and non-lethal effects coordinators at all levels. FA fire supporters in GWOT routinely coordinate and integrate nonlethal effects as well as the more traditional lethal effects.

As Field Artillery ceases publishing, its proud history boasts of having recorded the movement of the branch from focusing on Field Artillery firing operations to fires in combined arms operations to fires and effects in joint and combined operations across the spectrum of conflict, including counter-insurgency and stability operations.

The last several years of Field Artillery editions have discussed the consolidation of branch schools in centers of excellence, including the potential to re-merge the FA and Air Defense Artillery branches; FA Soldiers and leaders serving the Army as multi-capable Pentathletes in full-spectrum GWOT operations; the overriding emphasis on integrating joint fires and effects in GWOT, including developing joint fires observers (JFOs) and joint terminal attack controllers (JTACs); the restructuring of the force to make FA organic to the maneuver brigade combat teams (BCTs); and the beginning of Field Artillerymen's and Combat Engineers' eligibility for selection to

command BCTs. Historically the magazine's contents have pointed to the future of the FA and the Army. So, based on articles since 2000, what might the future look like?

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Major General David T. Zabecki, a US Army Reserve Field Artilleryman, is the US Army Europe's (USAREUR's) Deputy Chief of Staff for Mobilization and Reserve Affairs in Heidleber9, Germany. Previously he was the Commanding General of the Southern European Task Force (SETAF)-Rear in Vicenza, Italy. He also served in Israel as the Senior Security Advisor on the US Coordinating and Monitoring ("Roadmap") Mission. In the 1980s and 1990s, he was a frequent contributor to *Field Artillery* and won several History Writing Contests. He holds a Ph.D. in Military History from Britain's Royal Military College of Science at Shrivenham, England, and is the author of seven history books. General Zabecki retires in August 2007

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Patricia Slayden Hollis has been the Editor of Field Artillery since April 1995 and served as the Managing Editor from October 1987 until March 1995 at Fort Sill, Oklahoma. In her previous job, she taught Communication Skills in the Field Artillery Captain's Career Course at the FA School, Fort Sill, Oklahoma. She also taught Freshman English at Park College, Parkville, Missouri; was a technical writer for the Training Extension Course (TEC) Program at Fort Eustis, Virginia, and served as a news reporter for the morning and evening editions of the Lawton Publishing Company, Lawton, Oklahoma, winning four state writing awards. She holds an MA from George Washington University in Washington, DC. She retires in July 2007.

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Blake Keil
Executive Director
director@fieldartillery.org



Rachal Smith
Deputy Director
deputydirector@fieldartillery.org



Kayla Walker
Membership Manager
membership@fieldartillery.org

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