THE ARMY WEAPONS OFFICER: A SOLUTION FOR JOINT FIRES

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There are three primary reasons why the U.S. Army is uniformly poor at joint fires. The first reason is the current accelerated increase in technology. The Army does not have enough experts who, at the joint targeting level, are familiar enough with the technical aspects of the new weapon systems to be able to utilize them effectively. Secondly, the personnel primarily responsible for the coordination of joint fires are relatively untrained in the multimodal aspects of fires. The conglomerated structure of joint targeting relies on the collaboration of many personnel expertly trained within their specific domain or with their specific system. Few are trained jointly, and few, if any, are certified with the joint systems. The third, and last reason is due to the current Army structure having Field Artillery officers responsible for its execution, but neglecting their joint certification and training requirements. Field Artillery officers are responsible for joint fires, yet the Army neither requires, nor offers them any literal joint training that is proportionate to this monumental task. The fires community has no personnel who can conjoint the skill-sets of both the Master Gunner and the Targeting Officer to integrate Army fires across the entire joint force. The solution to this problem lies with the development of a tactical expert who is prepared to integrate fires on the operational level: the U.S. Army Weapons Officer.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE ARMY WEAPONS OFFICER: A SOLUTION FOR JOINT FIRES, by Jonathan D. Damalouji, 88 pages.

There are three primary reasons why the U.S. Army is uniformly poor at joint fires. The first reason is the current accelerated increase in technology. The Army does not have enough experts who, at the joint targeting level, are familiar enough with the technical aspects of the new weapon systems to be able to utilize them effectively. Secondly, the personnel primarily responsible for the coordination of joint fires are relatively untrained in the multimodal aspects of fires. The conglomerated structure of joint targeting relies on the collaboration of many personnel expertly trained within their specific domain or with their particular system. Few are trained jointly, and few, if any, are certified with the joint systems. The third and last reason is due to the current Army structure having Field Artillery officers responsible for its execution, but neglecting their joint certification and training requirements. Field Artillery officers are responsible for joint fires, yet the Army neither requires nor offers them any literal joint training that is proportionate to this monumental task. The fires community has no personnel who can conjoin the skill-sets of both the Master Gunner and the Targeting Officer to integrate Army fires across the entire joint force. The solution to this problem lies with the development of a tactical expert who is prepared to integrate fires at the operational level: the U.S. Army Weapons Officer.

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ACRONYMS

AC2	Airspace Command and Control
ACOPC	Army Cyberspace Operational Planners Course
ADA	Air Defense Artillery
ADP	Army Doctrine Publication
AF	Air Force
AFATDS	Advanced Field Artillery Tactical Data System
AFB	Air Force Base
AFMAN	Air Force Manual
AFTTP	Air Force Tactics Techniques and Procedures
AIT	Advanced Individual Training
AMDTC	Army Multi-Domain Targeting Center
ATP	Army Techniques Publication
ARFOR	Army Forces
AROC	Army Requirements Oversight Counsel
ASOC	Air Support Operations Center
ASI	Additional Skill Identifier
ATACMS	Army Tactical Missile System
BCT	Brigade Combat Team
BOLC	Basic Officer Leadership Course
C2	Command and Control
CAS	Close Air Support
CCT	Combat Controller
CJTF	Combined Joint Task Force

COIN	Counter Insurgency
C-RAM	Counter Rocket and Mortar
CTC	Combat Training Center
CW	Chief Warrant
DASC	Direct Air Support Center
DCG	Deputy Commanding General
DIVARTY	Division Artillery
DOC	Department Operations Center
DoD	Department of Defense
DOTMLPF-P	Doctrine Organization Training Material Leadership Personnel Facilities Policy
ERCA	Extended Range Cannon Artillery
EW	Electronic Warfare
FA	Field Artillery
FER	Final Exercise Reports
FSCM	Fire Support Coordination Measures
FSCOORD	Fire Support Coordinator
FSO	Fire Support Officer
GLO	Ground Liaison Officer
GMLRS	Guided Multiple Launch Rocket System
GMLRS-ER	Guided Multiple Launch Rocket System Extended Range
HIMARS	High Mobility Artillery Rocket System
ISR	Intelligence Surveillance Reconnaissance
JACWC	Joint Advanced Cyber Warfare Course
JAGIC	Joint Air Ground Integration Center

JCIDS	Joint Capabilities Integration Development System
JFC	Joint Force Commander
JFE	Joint Fires Element
JFSCOORD	Joint Fire Support Coordinator
JNAC	Joint Network Attack Course
JOC	Joint Operations Center
JOFEC	Joint Operational Fires and Effects Course
JTAC	Joint Terminal Attack Controller
LSCO	Large Scale Combat Operations
MCO	Major Combat Operations
MLRS	Multiple Launch Rocket System
MNC	Multi-National Corps
MOS	Military Occupational Specialty
MRAP	Mine Resistant Ambush Protected
MTCP	Military Training and Cooperation Program
MTOE	Modified Table of Equipment
NCO	Non-commissioned Officer
NSA	National Security Agency
NTC	National Training Center
OC/T	Observer Controller / Trainer
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OPFOR	Opposing Force
OPLAN	Operation Plan
PIM	Paladin Integrated Management

PrSM	Precision Strike Munition
RAM	Ramjet
RAND	Research and Development
RAP	Rocket Assisted Projectile
SAMS	School of Advanced Military Studies
SMSgt	Senior Master Sergeant
SOF	Special Forces
STS	Special Tactics Squadron
TACP	Tactical Air Control Party
TOC	Tactical Operations Center
TTP	Tactics Techniques and Procedures
ULO	Unified Land Operations
U.S.	United States
USAF	United States Air Forces
USCYBERCOM	United States Cyber Command
WIC	Weapons Instructors Course
WO	Warrant Officer

CHAPTER 1

INTRODUCTION

Being a Ground Liaison Officer, otherwise known as a GLO, is a unique experience in the Army. It is a broadening assignment which has the opportunity to be insightful and rewarding. GLOs are the ARFOR commander's liaison to the air component at the lowest echelon. Their job is to be the connective tissue at the tactical level to promote the unity of effort between the air and land components in order to achieve unified action for the Joint Force Commander. They are usually branched Field Artillery and are post-command captains. GLOs have immense amounts of un-anticipated responsibility. Not only are they the Army's sole representative to an entire Air Force wing, but more importantly, as an embedded liaison they are expected to learn about how the Air Force exists; their organization, their methodologies, their culture, their dogma, and even the mentality of their commanders.

As is with every broadening assignment, it is expected that GLOs return to the Army a better-informed officer; one who is prepared to integrate the lessons they learned into their next assignment, bettering the force systematically as they carry on their career. During their stint living with the Air Force, GLOs gain a level of insight to their sister service that allows them to catch a glimpse of the roots that form the Air Force's foundation. This thesis conveys the lessons learned from a GLO's three-year experience with an Air Force fighter wing, and is a first attempt at making the Army a better organization.

Purpose

The intent behind this thesis is to improve the U.S. Army's performance with joint fires to ensure it has the greatest chance for success when engaged in large-scale combat operations. It will provide an in-depth analysis of why the Army is mediocre when it comes to joint fires, and how this inadequate level of proficiency is getting steadily worse as technology advances. It will also offer a potential solution to the problems discussed. An amalgamation of both Air Force and Army concepts will produce a solution which allows for better joint fires integration at the division and corps levels. This thesis attempts to convey those concepts with the overall end-state of the Army initiating the necessary movements towards continued research or implementation.

Problem Statement

With an Army that is traditionally mediocre at joint fires, the increase in new technological developments within the Field Artillery causes the proficiency gap with joint fires integration to become even more extensive. The fires community currently has no personnel who can conjoin the skill-sets of both the Master Gunner and the Targeting Officer to close this gap, nor are there personnel who understand joint fires well enough to integrate them tactically at the division and corps levels. The Army needs tactical fires experts who possess an advanced understanding of the Army's new systems and who, more importantly, have the proper joint training, experience, and qualifications to synchronize joint fires at the division and corps levels.

Significance

The next military conflict involving large-scale combat operations will be won through joint fires. This is stated in U.S. Army doctrine:

> Success in large-scale combat operations is dependent on the Army's ability to employ fires. Fires enable maneuver. Over the past two decades, potential peer threats have invested heavily in long-range fires and integrated air defense systems, making it even more critical that the U.S. Army possess the ability to maneuver and deliver fires in depth and across domains.[1]

This same paragraph also summarizes why it is so critical to improve U.S. fires capabilities. That reason, quite simply, is to maintain the technological pace with Russia and China. The U.S. no longer possesses the technological edge when it comes to surface-to-surface fires, and the Army senior leadership identified that particular deficiency as the number one priority to fix.

To win in unified land operations, commanders must be able to leverage fires to shape the operational environment. By shaping the operational environment, they set the conditions for subsequent combat elements and subsequent operations. If the U.S. goes to war with China or Russia, the Army will need to greatly increase its cross-domain and long-range precision fires capability to be able to achieve victory.

With the military developing new weaponry across the joint spectrum, the need for new doctrine will soon follow. With new doctrine comes the need for new, or newly-trained, personnel required for its implementation. There exists a homeostatic relationship between technology, doctrine, and organization. If the three are not well balanced or if they fail to complement one-another, overall effectiveness is lost. To prevent this loss in

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[1] Headquarters, Department of the Army (HQDA), Army Doctrine Publication (ADP) 3-19, *Fires* (Washington, DC: Government Publishing Office, July 2019), V.

the world of fires, it is up to the members of the Field Artillery to recognize when this balance is, or could be lost, and to recommend solutions for its future adjustment.

Research Question

What are the impacts of instituting a Weapons Officer to coordinate fires at echelons above brigade, and how would it affect the fluidity of fires?

Assumptions

There were multiple assumptions made throughout the writing of this thesis, primarily concerning members of the Field Artillery. Understanding that each service member's experiences and career path is unique in its own way, the first assumption is that, generally, field artillerymen have vastly similar experiences until reaching the rank of Lieutenant Colonel. Most have the baseline fires certifications, and the preponderance are considered uncertified by specialty schools such as the Joint Operational Fires and Effects Course (JOFEC) or Joint Terminal Attack Controller (JTAC) course.

The primary assumption in this thesis is that the Army Weapons Officer is not a "quick-fix" solution for joint fires. Rather, it is a recommendation which will require longevity and periodic evolutionary changes in order to achieve its maximum effect. Most importantly, however, it is a recommendation for the Army to adapt a different mindset when considering joint fires and multi-domain integration.

Scope and Limitations

The scope of this thesis covers only the baseline concepts, reasoning, and justification behind the Army Weapons Officer. It uses the DOTMLPF-P system of analysis combined with educational concepts derived from the Air Force Weapons

School. The thesis does not cover in-depth details of the Army Weapons Officer School, nor its total composition. It also does not cover the Weapons Officer's required follow-on assignments for mandatory joint integration. It is primarily focused around fires, and more specifically, joint fires. While the Weapons Officer concept can potentially be applied Army-wide and comparisons made throughout each branch, this thesis will only cover fires; that which the Field Artillery owns.

Like the Air Force, the Navy and Marines have a similar version of a Weapons Officer. However, their relationships and structure regarding the topic will also not be discussed. This will allow the thesis to be more focused. Also, the Navy and Marines are rather self-contained in nature with regards to fires. They have organic air and indirect fire assets, so the nature of their multi-domain integration is inherently different than that of the Army and Air Force. Also, the preponderance of Army joint interaction is with the Air Force and not with the Marines of Navy.

Based on the target audience and the follow-on intent for distribution, this thesis is limited to discussing solely unclassified information. It is also limited through its inherent association with the author. It covers the experiences gained by one individual in a very particular assignment. It projects the lessons learned from a field artilleryman working three years within an Air Force fighter wing in Europe. Being that the Air Force is as varied as the Army is organizationally and culturally, the insights gained are inherently, but unavoidably, somewhat biased towards that particular wing and towards the fighter community in general.

Qualifications

I am an Army Field Artillery Officer, qualified to both deliver and call for fires and have coordinated for both in a joint environment. I worked with the Air Force for three years, serving as a GLO at Aviano Air Base with the 31st Fighter Wing. I have a vested interest and a passion for both fires and the Field Artillery and would be remiss if I passed on an opportunity to contribute positively to my profession of arms. My experiences as a GLO gave me an inside perspective to Air Force organization and culture and allowed me to see first-hand the positive effects one person (a USAF Weapons Officer) can have on an organization. I want to overlay the USAF Weapons Officer concept onto the Field Artillery in an effort to make us a better organized and an overall more lethal force.

Summary

The Army is currently preparing for Large-Scale Combat Operations. Critical to its success in this endeavor will be how well it performs with joint fires. As it stands, not only is the U.S. Army failing to keep stride with its peer competitors, but research shows the Army not performing to its potential with joint fires integration. This is due to the Army neglecting its fires skill-sets during OIF/OEF, out-pacing its doctrine with its technological innovations, and its reluctancy to properly train its individuals on joint systems and in a joint environment. The Army will face major problems with joint fires in the near future, and if it wants to mitigate these problems, it needs to find an enduring solution.

CHAPTER 2

LITERATURE REVIEW

The research for this project was quite inspirational. Although the Weapons Officer is technically not a new concept within the military, it is a new concept if applied within the confines of the Army. The research conducted to write this thesis proved that there are indeed problems the Army Weapons Officer can solve. Additionally, there are at least two senior field-grade officers who had a similar idea to an Army Weapons Officer, and defended its justification well. Finding this perpetuated the author's initial thoughts, and further stimulated the drive to make this thesis a product worth distributing.

However, the research did have its limitations. Because the Army does not currently have a Weapons Officer, implementing one can be considered a semi-original thought. Unfortunately, as one might expect with original or semi-original ideas, there are often limited resources from which to pull when looking for literature and research material. However, what research that was found proved just as effective and definitive for the thesis. Although there might not be a plethora of data and material concerning the specific subject at hand, i.e., an Army Weapons Officer, there is a mountain of information discussing the issues the Army Weapons Officer is trying to solve. If the research uncovers capability gaps that a Weapons Officer can fix, or conversely, if the research definitively proves that an Army Weapons Officer is not needed, then the effort can be considered successful and overall worthwhile to the Army.

The preponderance of written research contributing to the thesis consisted of previous theses and monographs written by scholars within the U.S. military; most of them coming from SAMS and the Army War College. Likewise, doctrine was also

heavily relied on for a baseline understanding of both Army and Air Force composition. Books such as JP 3-09, ATP 3-09.90, AFTTP 3-3.IPE, and especially AFMAN 11-415 served as the bedrock of the doctrinal research, and served as the spindle on which the author's abstract ideas were wrapped.

The documents which proved most valuable, however, were the theses and monographs written by military students concerning joint fires. Multiple themes were noticed while reading these, most of them revolving around the Army's inability to effectively synchronize, and execute fires. To summarize, the individual research conducted by these students showed there are two main reasons lending to the Army's inability to perform well with fires: 19 years of counter-insurgency warfare in Iraq and Afghanistan, and the Army structure with cross-domain fires training.

The Atrophy of the Field Artillery

The past 19 years of counter-insurgency (COIN) warfare caused a decline in field artillery proficiency at the soldier level and a general atrophy of the branch. This is no secret and was discussed in length by the majority of publications read. For MAJ James Landeaux, MAJ Ryan Johnson, and COL Michael Hartig, it was the main subject of their work.

MAJ Langdeaux's thesis, "Optimizing Artillery Fires at the Brigade Level," found that decades of war dominated by COIN operations left the overall competency of artillery officers so degraded they were unable to effectively support maneuver commanders in large-scale combat operations and in a decisive action environment.

> After two decades of COIN operations executing non-traditional field artillery missions, fire supporters in Brigade Combat Teams (BCTs) are lacking the experience, leadership, and training to integrate and synchronize fires to

> enable maneuver. As a result, the gaps in experience, leadership, and training reflected a downward trend in fire support skills necessary to support maneuver.[2]

His analysis, conducted in accordance with the Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) framework, revealed there is a capability gap within the areas of Training and Leadership. He maintains the Army does not have the quality of training nor the quality of personnel available to conduct fires and fire support at the brigade level. This is a direct result of units' inability to conduct realistic training while at home station and the lack of operational need for artillery fires during the past 20 years of conflict. He states that over the past two decades, "…COIN often left commanders needing precision effects. This, combined with artillery conducting non-traditional missions eroded the experience and relationship between maneuver and artillery."[3]

These sentiments were also shared by MAJ Johnson, who wrote his thesis a year earlier than Langdeaux in 2016. In his thesis, "Fires Readiness: The State of U.S. Army Fires in Support of Combined Arms Maneuver at the Division Level," he reflects on his personal experience as an OC/T and member of the Wolf Team at the National Training Center,

> During this time, I noticed a troubling trend, divisional shaping fires were largely ineffective in setting the conditions for maneuver units to be successful. Upon initial research at the time I found that numerous Final Exercise Reports (FERs) from MTCP as well as reports from the other Combat Training Centers (CTCs) validated this trend. This initial impression led me to the hypothesis stated above:

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[2] James J. Langdeaux, "Optimizing Artillery Fires at the Brigade Level" (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2017), 3.

[3] Ibid., 32.

atrophy in divisional fires proficiency might be attributed to lack of use over the past ten years.[4]

MAJ Johnson conducted thorough research to substantiate his analysis and derive his conclusions. Through the execution of a complete Capabilities Based Analysis, subsequently including a Functional Area and a Functional Needs Analysis, he was able to combine his experiences and other relevant fires data he extracted from the NTC's databases and compare them to the doctrinal requirements field artillerymen face when operating at the division level. His results, although similar in nature to Langdeaux's, were backed by quantifiable data, making them all-the-more eye-opening. In his Functional Needs Analysis, Johnson found the specific skills that artillerymen lack are specifically: the ability to clear fires, link sensors to shooters, conduct counterfire operations, and the ability to detect targets.[5] His summary, rather dishearteningly, drove home the need for a real change and improvements at Ft. Sill. "I found that the fires community has lost proficiency at certain core competencies and is only marginally effective at providing fires in support of combined arms maneuver in high intensity conflict."[6]

His conclusion and recommendations left the reader wanting, however. He reaffirmed his initial hypothesis of inadequate fires execution due to a decline in relevance and training insufficiency, but only made one noteworthy recommendation for

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[4] Ryan Johnson, "Fires Readiness: The State of US Army Fires in Support of Combined Army Maneuver at the Division Level" (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2016), 4.

[5] Ibid., 91.

[6] Ibid.

improvement. His recommendation was for the Army to continue with its already-planned re-implementation of DIVARTY, and to compose a training package of relevant high-intensity scenarios be developed and implemented through use of a Mobile Training Team.

COL Hartig, in his strategy research project "The Future of the Field Artillery," took the analysis a step further. Like the two others, his focus centered on the lack of proficiency in the core competencies due to the lack of operational need during OIF/OEF; but unlike Johnson and Langdeaux, he offers some foresight into the future of fires. His project, being written in 2010 for the Army War College, was published at the beginning cusp of Multi-Domain Operations battle theory. Having the knowledge and understanding of what the implementation of Multi-Domain Operations means for the fires community, he was able to make recommendations for future changes; already predicting what problems the branch would face. In the process of doing so, however, he informally describes the need for an Army Weapons Officer.

> The FA needs to develop a better way of synchronizing both the lethal and non-lethal aspects of planning, since the FSOs are usually directed to take on this responsibility. As we continue to grow joint fires professionals, we must invest in creating officers and NCOs who can adapt quickly to transitions and function effectively in any physical or cultural joint, interagency, intergovernmental and multinational environment. We need to continue to develop leaders who understand joint doctrine and how to implement all aspects of fires in joint operations. We must be able to perform the basics of fire support as defined in Joint Pub 3-09, Joint Fires, fires that assist air, land, maritime, and SOF to move, maneuver, and control territory, populations, airspace, and key waters.[7]

[7] Michael J. Hartig, "The Future of the Field Artillery" (Strategy research project, U.S. Army War College, Carlisle Barracks, PA, 2010), 16-17.

He continues to talk about the timeline for skills improvement and how long it would take for organizational changes to take place, but his overall point was well-taken. With as much as the fires skill-set atrophied during the recent COIN operations, the ability for field artillerymen to be effective fires planners and integrators during future MCO operations will be greatly lessened.

These three authors proved one obvious point with their research: field artillerymen are not fires experts. In the next war, if the U.S. Army, and specifically the Field Artillery, cannot provide personnel who are competent at their craft, or if they are inept at joint fires integration, winning the war will be an up-hill battle.

Joint Fires and Multi-Domain Operations

The second group of scholarly works deserving of mention revolve specifically around joint fires integration within multi-domain operations. The only article of significance was written by Army COL Javier Soria who attended the U.S. Air War College in 2017. His report, "Implications of Cross Domain Fires in Multi-Domain Battle," researched the operational construct of multi-domain operations, why cross domain fires will be crucial to success, and how well the U.S. Army is constructed to facilitate cross-domain fires in direct action.

COL Soria's thesis effectively encapsulates the need for multi-domain and cross-domain fires and greatly perpetuates the impetus for instituting an Army Weapons Officer. He describes how the artillery's current land-based fires capabilities worked in OIF/OEF, but will be unable to do so in the future due to their inability to be utilized in a

multi-domain environment and achieve cross-domain effects.[8] He maintains that because our systems and procedures, for the most part, do not work integrally in a joint capacity, they are limiting the Army's ability to achieve cross-domain effects. He believes we should begin building platforms which are inherently joint, and using the Army's current systems in a multi-dimensional role.

> Overall, each military service has unique capabilities to effectively operate in various domains, ultimately engaging designated enemy targets, however, as adversaries emerge with sophisticated countermeasures to degrade and disrupt strike capabilities, sensor networks and precision guided munitions, the aim for U.S. military services is to build a capability that best synchronizes and integrates cross domain fires in multi-domain operations.[9]

One of his solutions is an organizational change which pushes a scaled air defense unit to maneuver elements to establish a more mobile defense-in-depth. Although this organizational change does not seemingly apply to this thesis, the thought process behind his idea holds the value. COL Soria's research report is important to this thesis because it discusses the need for the Army to consider joint fires in a different capacity. He passively criticizes the Army's inability to think about joint fires in a different dimension, or in a different light. By doing so, he perpetuates the root concept behind the Army Weapons Officer, thinking about joint fires from a different perspective in an attempt to improve the overall process. Although he does not mention it directly, through his description of how he envisions weapons should work in the future and how systems should operate achieving cross-domain effects, he is describing a capability which is not

[8] Javier C. Soria, "Implications of Cross Domain Fires in Multi-Domain Battle" (Research report, Air War College – Air University, Maxwell AFB, AL, 2017), 11.

[9] Ibid., 12.

solely Army or Air Force relevant. He is effectively describing systems that are inherently joint. This abstract notion and his overall interpretation towards what it means to be "joint" is largely the concept on which this thesis is based.

These last three articles deserving a special mention are most closely aligned to this Weapons Officer research project. All three discuss in detail the Army's struggle to conduct joint fires; but what is more, is their individual research findings definitively prove the necessity for an Army Weapons Officer and it describes the capability gap which the Army Weapons Officer's implementation would eventually negate.

"Improving Joint Fire Support for 21st Century Hybrid Warfare" by Army MAJ John Cherry at the Naval War College begins by describing the origin of the term "jointness" and why the Army struggles to produce the necessary "synergy" to make joint fires integration effective. During his introduction, he summarizes a common theme found in his research, essentially stating that the elements in charge of joint fires do not have the expertise or requisite structure to do it effectively. This, he says, is one of the big reasons for the Army's failure.

> A common theme in these arguments for improvement has been that a Joint Fire Support Coordinator (JFSCOORD) is needed in the Joint HQ to improve unity of effort in fires coordination… Another common theme is that joint doctrine does not provide enough guidance for what capabilities are needed in the Joint Force HQ to effectively integrate lethal and non-lethal fires.[10]

During his follow-on analysis, he includes operational examples during OIF/OEF, where lethal/non-lethal fires integration was successful due to a single officer in charge of the joint fires cell who was able to establish a unity of effort. In reference to MNC-I

[10] Donald L. Cherry Jr., "Improving Joint Fire Support for 21st Century Hybrid Warfare" (Paper, Naval War College, Newport, RI, 2012), 2.

and CJTF-76 he states "…successful integration of fires was achieved when a single point of authority was established to focus. on fires integration...both JFCs demonstrated the value they placed on effective fires integration by putting their DCGs in charge of their JFEs."[11] The concept seems sound; however, the only problem arises when analyzing the qualifications of general officers. Although they may make exceptional leaders and battle orchestrators, their tactical relevancy and operational perspective are lessened due to their marginal level of expertise with the Army's more novel weapon systems. This simply being a product of their position as operational and strategic leaders, not of their individual astuteness or experiences.

MAJ Cherry makes mention of this conundrum as well. He agrees, emphasizing the need for implementing a tactical fires expert, and not simply a DCG or other non-fires personnel, in charge of the joint fires effects cell.

> In the case of smaller JTFs, and in future campaigns that require more direct combat action, a general officer may not be optimal to focus. on fires. This same oversight and unity of effort for fires integration could also be attained under a Joint FSCOORD position. Fire Support officers provide this capability for lower echelon unit commanders . . . This supports the need to ensure that the Joint Fires Cell (JFE) is manned by fire support experts . . . ensure that the JFE has right types of experts, and enough of them to manage the expected volume of targets.[12]

His conclusion drives home the needs for a tactical fires expert integrating capabilities within a multi-domain environment.

> Effective integration of fires involves the close cooperation of multiple staff components and functional cells. Keeping these diverse staff elements focused requires unity of effort that can only be provided by a single point of authority. It is unrealistic to believe that the JFC or the J-3 would be able to fill this role

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[11] Cherry, "Improving Joint Fire Support for 21st Century Hybrid Warfare," 10-11.

[12] Ibid., 11-12.

> considering the diverse level of expertise and full-time management required to effectively integrate fires. A JFSCOORD will provide the expertise needed to manage fires integration for the JFC.[13]

What he fails to mention, however, is what qualifications or prior experiences a JFSCOORD will need in order to be able to manage fires integration successfully. This is where the Army Weapons Officer, a qualified joint fires coordinator, will serve as the perfect fit. MAJ Cherry is describing the need for an Army Weapons Officer, but is instead referring to it in his publication as a JFSCOORD. This thesis concurs with the operational need for the JFSCOORD position, but takes it a step further arguing that not just any senior field artilleryman can, nor should, hold that job.

While MAJ Cherry identified the operational need for an Army Weapons Officer, COL Stephen Wertz, while at the Joint Advanced Warfighting School, successfully identified the theoretical need. His thesis, "Redefining Joint Fires Service Functions to Better Support Joint Force Operations" is the perfect complement to this thesis. It was the only academic piece in the review that intentionally described the failure of Army joint fires integration as a product of culture clash and a one-dimensional stance towards fires and a fires organization.

COL Wertz claimed that because the Air Force and the Army are two drastically different cultures, they will never optimize joint fires to its maximum. The inherent differences between the two branches, such as their training focuses (personal expertise in the Air Force versus. team efficiency in the Army) and leadership philosophies (centralized control, decentralized execution versus. mission command) cause too many

[13] Cherry, "Improving Joint Fire Support for 21st Century Hybrid Warfare," 13.

secondary and tertiary effects which need to be overcome in order to successfully execute joint fires. These differences, in turn, perpetuate a different mentality and thought process from leaders when tackling problems or mission-sets. “These different visions, core competencies, and modes of operation affect the worldviews of the soldier and the airman, and contribute to viewing warfare through very different lenses.”[14] COL Wertz maintains that in order to maximize the efficiency of joint fires, everyone has to first get on the same page theoretically. He substantiates this thought using the example of the Marine Corps air-to-ground construct as the right example, and defines their keys to success stemming from everyone having the same worldview.

Marine aviators have one primary mission, and this is to produce tactical level fires in support of ground operations. This worldview concept is introduced early in their careers and perpetuated through education, training, and warfighting.[15] This is how they achieve a unity of effort. Achieving it allows, “ground and air operators to see the battlefield through a single prism and successfully synchronize aerial fires with ground operations.”[16] He continues on to say, “They grow up in an environment where air and ground operations are not separated, but are intertwined.”[17] This concept of a joint team stemming from an upbringing in a joint environment is, essentially, the concept behind

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[14] Stephen A. Wertz, “Redefining Joint Fires Service Functions to Better Support Joint Force Operations” (Master’s thesis, Joint Forces Staff College, Norfolk, VA, 2012), 52.

[15] Ibid., 57.

[16] Ibid.

[17] Ibid.

the Army Weapons Officer. Instead of being a joint team, the Army Weapons Officer is a joint individual who can view fires from a multi-dimensional, or multi-domain perspective.

This intertwined upbringing of the Marine Aviator is a stark contrast to the current typical Army stove-piped career path. The majority of brigade and division commanders, stemming from maneuver backgrounds, are maneuver-centric with their priorities, and consider air elements as a secondary effort and a supporting unit. Even artillery officers, who spent their entire careers within the fires domain, are still relatively ignorant with regard to aerial platforms. The Army's one-dimensional upbringing for its leadership facilitates the inability to view air and ground as equal domains, let alone as a single effort, and perpetuates the dysfunctional execution of joint fires. COL Wertz describes this problem perfectly:

> Army and Air Force leaders receive training and education based primarily in the domain in which they operate . . . In both instruction and training AF fires are introduced and sometimes practiced. However, they are usually secondary training events. Because so little emphasis is given to air operations, ground leaders don't usually completely understand it. This leads to air operations receiving little emphasis inside the Army, and causes Army leaders to look for solutions to land warfare problems in Army terms . . . The fact is that Army education and training does not facilitate leaders viewing operations in terms of the air and ground domains. Due to this fact, most Army leaders plan their operations based on their internal assets because they are more comfortable with them . . . This bifurcated relationship between Army ground fires and Army attack aviation, coupled with the nature of the relationship with AF tactical fires elements, leads to desynchronization and a reduced effectiveness of tactical fires. There is no inherent air-ground, fires team.[18]

[18] Wertz, "Redefining Joint Fires Service Functions to Better Support Joint Force Operations," 45, 46, 52.

Understanding that the Army instituted the JAGIC to solve this "fires team" problem, he then tackles the problems inherent with the JAGIC organization. His findings substantiate the second reason justifying a Weapons Officer: artillerymen and the leaders in the joint fires cells aren't qualified to do the required job.

> How many Army and AF leaders possess the level of comprehensive knowledge to understand tactical operations in the air-ground dimension to this level of fidelity? The historical information presented earlier in this paper and the tactical air-ground issues of today suggest the answer to this question is "not many" . . . the personnel in JAGIC are not experts in airspace command and control. ASOC/TACP personnel execute airspace control and integration as secondary duties and Army AC2 personnel are not trained to integrate large numbers of airspace users operating at higher altitudes. While JAGIC is a major improvement, it does not possess trained air support operations controllers (airspace integrators), such as those resident in the Marine Corps Direct Air Support Center (DASC).[19]

COL Wertz's research complements this thesis well. He expertly describes the issues with joint fires that originally instigated the genesis of this thesis. The difference in culture, mindset, and priorities leads Air Force integrators down a different path than their Army counterparts. By viewing joint fires from a different aspect and having vastly different focuses, creating synergy and unified action with fires is hardly attainable. Thus, COL Wertz must agree with the theory propelling the use of an Army Weapons Officer: a commonality needs to exist between Air Force and Army, and the meaning of "joint" needs to be re-defined. Through the development and implementation of an Army Weapons Officer (or a JFSCOORD for MAJ Cherry), joint fires at the operational level will vastly improve.

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[19] Wertz, "Redefining Joint Fires Service Functions to Better Support Joint Force Operations," 45, 55.

The last bit of data which significantly contributed to this research project was an article written by Jason Bender in the Small Wars Journal. His article, *The Cyberspace Operational Planner*, is juxtaposed in comparison with COL Wertz's thesis, because they both focus around the cultural differences between branches and the theoretical approach to joint fires integration.

Being a cyber-professional and former Active Duty intelligence officer, his experiences with joint fires, and specifically non-lethal fires integration left him frustrated due to the Army's inability to integrate his domain effectively. He largely blames the Army's lack of branch or functional diversity in an individual's career progression as well as the general ignorance of cyber operations as the reason for the Army's inability. He describes his experiences in a joint environment, illustrating the cultural gap between lethal and non-lethal experts:

> The operations community often regards, somewhat tongue-in-cheek, the cyberspace community as populated by individuals 'getting their geek on' – in other words, with no operational sense – and often believe that cyberspace operations are too hard to understand and better done by someone else. Well-trained and technically savvy cyberspace operators, on the other hand, are frequently hindered by junior rank and a lack of service or branch common core education, and lack of tactical- or operational-level planning experience, among other things, and frequently compounded by an inability to communicate in common doctrinal or operational language. The two communities effectively stand on their 'side of the street' looking at each other intently, but often fail to cross and understand one other.[20]

Like COL Wertz, Bender illustrates the problems faced within a joint community when two members from different cultures and domains try to interact. Being an advocate

[20] Jason M. Bender, "The Cyberspace Operations Planner: Challenges to Education and Understanding of Offensive Cyberspace Operations," *Small Wars Journal* (2018), https://smallwarsjournal.com/jrnl/art/the-cyberspace-operations-planner.

for his former branch, he emphasizes the need for Army commanders to understand cyber and how to properly integrate it into the joint fires process. But having a cyber-expert as a member of a JAGIC is not good enough. To establish a unity of effort from which to capitalize simultaneous. lethal and non-lethal effects, the leaders in the fires echelons need to have an advanced understanding of cyber. However, this cannot be accomplished if the two cultures are opposite in nature. Again, he describes the difficulties an FSO might have integrating cyber into the joint fires process, and the drawbacks to working with many, as opposed to one, subject matter experts.

> While well-trained and technically savvy in their cyberspace fields, technical experts deployed in support of operational-level and Combatant Commander planning efforts are hindered many times by junior rank compounded by lack of service or branch common core education; differences in inter-service or joint force culture; lack of tactical- or operational-level planning experience; and in some cases, individual personalities incompatible with working in collaborative, multi-service planning teams. This cultural divergence – 'mouth-breathing-knuckle-draggers' versus. the 'pocket-protector-and-horn-rimmed-glasses-wearing-geeks' – often frustrates effective communication or understanding of operational objectives, desired effects, tactical tasks, or expectations and limitations faced by the other. Failures in communication or understanding then lead to planning that does not link effects created by the supporting unit to the supported unit's objectives, or worse, planning and targeting that work at cross-purposes or unnecessarily duplicate efforts.[21]

The significance of this article lies with Bender's understanding of the difficulties of establishing a unity of effort without first establishing a commonality of culture and tactical expertise. When two different individuals, raised with a different understanding of warfare and within a different culture attempt to work together in a highly-stressful and often lethal climate, too much friction results and what synergy that could have been gained through their expertise, is lost. This justifies the need for the Army Weapons

[21] Bender, "The Cyberspace Operations Planner."

Officer's service immaterial and inherent joint nature. By training extensively and equally on artillery, air-to-ground and cyber systems, and living consistently within those domains, they will be able to integrate and communicate more effectively with the tactical representatives from each branch and with each service while working in a joint environment.

Summary

The research that was conducted for this thesis was more than adequate to conduct a thorough analysis on the viability of implementing an Army Weapons Officer. Through the research of doctrine, the building blocks for the concept were laid. Army unit composition was explored, and the roles and responsibilities of key personnel, specifically in fires echelons, were identified to ensure that the need for a Weapons Officer actually existed. Likewise, Air Force doctrine concerning joint fires, and specifically, the Weapons and Tactics shop were analyzed in depth. They proved invaluable to understanding the theory behind the Air Force's stance towards joint fires and integration as a process.

The study of research projects and articles showed them all pointing to the same two problems, and they all derived very similar conclusions. One, the Army lost its proficiency with artillery and fires integration due to a gap in experience and, as a whole, will be unable to conduct fluid joint fires in a high-intensity and large-scale combat scenario. Secondly, the Army struggles with joint fires integration because it is not structured correctly to execute joint fires. The personnel are not trained adequately, and the wrong people are too frequently put in charge. Combined with large cultural differences, these issues create a dysfunctional relationship between the Army, the Air

Force and cyber communities and prevent a unity of effort from ever being established with joint fires.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter outlines the research methods used to answer the question: What are the impacts of instituting a Weapons Officer to coordinate fires at echelons above brigade, and how would it effect the fluidity of fires? To answer those questions, the author must first research what it means to coordinate fires at echelons above brigade, what it means to be a Weapons Officer, and from what stems their operational need. Once these three answers are derived, only then can one formulate a viable recommendation towards the implementation of an Army Weapons Officer.

Data Collection

To answer the first question, one must rely on U.S. Army doctrine and the DOTMLPF-P framework. By analyzing the Army Force Design Update process, one understands the impact, and often the repercussions, of developing systems too quickly. Likewise, scouring ADPs/ATPs and Joint Publications is the only way to determine how Army fires organizations are structured, and are the only way to get an objective perspective on the Army's theory behind joint fires in the new multi-domain environment. Understanding the roles and responsibilities of the individuals holding influential positions within the division and brigade level fires organizations is crucial to forming the baseline understanding of whether an Army Weapons Officer is a viable option. For this, JP 3-09 and ATP 3-09.90 proved invaluable. JP 3-09 helped highlight one of the major points of this thesis: the people in charge of fires are not necessarily

qualified to do the task at hand, and the Army relies on rank rather than qualification for holding positions with tactical influence.

This also held true on the Air Force side of doctrine, which helps to answer the second sub-question of what it means to be a Weapons Officer. Without the study of AFTTP 3-3.IPE and AFMAN 11-415, the overall perspective of the Air Force would not be ascertained, and in order to completely understand a Weapons Officer, this is critical. AFMAN 11-415 allows the reader to juxtapose the Wing Weapons and Tactics Shop with a DIVARTY's JAGIC and compare roles and responsibilities as well as overall functionality. Not only does AFMAN 11-415 offer insight to the Tactics Shop, but it also specifically defines the answer to the last of the initial sub-questions: the purpose of the Weapons Officer.

To answer the last sub-question, one must identify the operational need for an Army Weapons Officer. For that, the best sources of information proved to be from two main sources: scholarly works from military service members and informal conversations with subject matter experts.

It is one thing to understand a JAGIC on paper, but it is quite another to hear a CW4 talk about how it actually functions. Their insight was extremely useful in formulating the analysis and deriving the conclusion for this thesis. Likewise, without the ability to talk with active Air Force Weapons Officers, one would be completely ignorant of their informal roles within the squadron and the reins they are given outside their specified duties and responsibilities.

As beneficial as talking with the subject matter experts was, the scholarly works defined the need for a Weapons Officer most effectively. The theses from COL Wertz,

COL Soria and MAJ John Cherry clearly illustrated the problems the Army is facing when it comes to implementing joint fires. Their knowledge, experience and expertise allowed them to leverage the right facts about Army organization and functionality and transpose them onto current Army issues, clearly defining the problem.

Strengths and Weaknesses

By far, the most concrete aspect of the research was the doctrine. Any research which can produce hard, current data is worth its weight in gold when defending a position or idea. JP 3-09 as well as all the Air Force publications provided the data necessary. Only in the Air Force's AFMAN 11-415 was there any leniency to allow for interpretation. This was in reference to the Weapons Officer's wartime duties and responsibilities and the fact that they were not clearly defined, or defined at all. It took a conversation with a Weapons Officer to understand that this ambiguity was done intentionally to avoid having to specify war-time duties for each Weapons Officer type. Specifying the duties for each platform would be too laborious., and for the non-fires-related Weapons Officers, such as those trained in intelligence or mobility, the lack of specificity in AFMAN 11-415 serves its purpose well. It allows latitude and a degree of flexibility for the Weapons Officer to adapt to their own unique situation accordingly during a time of war.

Which leads to the major weakness in this research, namely, personal opinion. A minor portion of this thesis reflects the personal opinions of not only the author, but of other service members, specifically Air Force Weapons Officers and Army targeting Warrant Officers. Although the preponderance of information was taken from doctrine

and other scholarly works, using personal observation and conversations were justifiably necessary to fill the void in available research material for Army Weapons Officers.

Summary

The research that was conducted in order to answer these three sub-questions makes up the analysis seen in chapter four of this thesis. The primary methods of research: the study of Army and Air Force doctrine, scholarly works composed by military members, and informal discussions with the relevant subject-matter-experts, successfully provided the author with the requisite material needed to conduct a viable analysis.

CHAPTER 4

ANALYSIS

Understanding the Problem

> Dude, we worked with them [Army artillery] all day. They missed our registration point by an entire terrain feature.
>
> –SSgt Dan Keller, STS CCT, Nangarhar Province 2017

Within this brilliant age of military technology and cutting-edge innovation, the United States military finds itself, yet again, faced with a familiar problem: keeping doctrine relevant. One sees this problem specifically highlighted when analyzing how the military conducts joint fires. Throughout the past century, the complexity of joint fires seemingly grows in stride with that of the increasing technology. As technology becomes more complicated, so do the required methods in which to use it effectively. Since 1982, the U.S. military specifically described this parallel progression three different times and in three different ways, all using its battlefield doctrine: Air-Land Battle, Full Spectrum Operations, and Multi-Domain Operations. Conceptually, all three are designed to describe how the U.S. military will use joint fires to achieve a desired effect on the battlefield. Now that Space and cyberspace are considered attack mediums, Multi-Domain Operations currently serves as the military's current doctrine. It includes all applicable mediums: air, land, maritime, space, and cyber relevant to the existing character of war. The addition of space and cyber as mediums, or domains, from which we can attack the enemy, makes the task of conducting joint fires measurably more difficult. As the U.S. Army is currently constructed, it is unable to perform joint fires effectively.

There are three primary reasons why the U.S. Army performs poorly at joint fires. The massive acceleration of technology is the first. The Army does not have enough experts who, at the joint targeting level, are familiar enough with the technical aspects of the new weapon systems to be able to utilize them effectively. If a novel weapon system entered the force tomorrow, the senior leaders in charge of fires would be ignorant of the capabilities and limitations of the systems they are commanding. Having state-of-the-art weaponry is good, but knowing how to use it is far more valuable, lest the advantage the weaponry affords be lost.

The second reason the Army struggles with joint fires is because the personnel primarily responsible for its coordination are relatively untrained in their branch, as well as the multimodal aspects of fires in general. The past two decades of COIN operations left the artillery skill-set greatly diminished. In addition, the conglomerated structure of joint targeting relies on the collaboration of many personnel expertly trained within their specific domain or with their particular system. Few are trained jointly, and few, if any, are certified with joint systems. In its current construct, the Army has Field Artillery Officers responsible for joint fires execution, but neglects their joint certification and training requirements in every aspect of fires except artillery. Field Artillery officers are responsible for joint fires, yet the Army neither requires nor offers them any literal joint training that is proportionate to this monumental task.

The third and last reason is due to the Army's current theory behind joint fires and joint doctrine in general. To the Army, a joint organization is one which consists of multiple people from different backgrounds working together to accomplish a common goal. With this construct, it has proven difficult to establish a unity of effort due to

culture clash and different doctrinal priorities. The Army continuously attempts to make this construct work despite the repetitive shortcomings and inefficiencies found within the structure itself and is trying to force a solution within a system that is inherently flawed. Instead of altering its perspective on what a "joint organization" means and adapting its structure to fix the baseline culture clashes and doctrinal differences, the Army, instead, tries to work around them.

The current "long-range precision fires" capability gap currently overshadows the previously existing, and now more prevalent, problem of joint fires inefficiency. With new technological developments within the Field Artillery in response to the need for long-range precision fires, the proficiency gap with joint fires is now even more extensive. The fires community has no personnel who can close this proficiency gap, nor are there personnel prepared to integrate Army fires across the entire joint force. With the Field Artillery branch responsible for the Army's overall execution of joint fires, it is up to the members of the branch to develop a solution to increase the lethality of the joint force. The solution lies with the development of the U.S. Army Weapons Officer.

Accelerated Increase in Technology

The ability to deliver fires and effects at an extended range is a coveted capability. Fires shape the battlefield and can directly influence the success or failure of maneuver objectives. Currently, the United States Field Artillery is grossly outgunned by its near-peer competitors Russia and China. Comparing systems with Russia specifically, the U.S. is not only out-ranged by Russian artillery, but it has a drastically fewer number of total

and type of pieces.[22] While not being as diverse as Russia might not necessarily be a bad thing, the U.S. can be considered out-matched in numbers. A study published by the RAND Corporation in 2017 supports this fact, "…U.S. Army ground units would face an adversary with quantitatively superior artillery that had a broader variety of munitions available and the ability to strike at long ranges."[23] What is of significant concern, however, is when placed juxtaposed, the piece-to-piece comparison shows the U.S. artillery drastically out-ranged.

The U.S. is currently out-matched, and Russia and China are out-pacing the U.S. with future fires developments. Over the past decade, they successfully developed a series of missiles that can travel at hypersonic speeds, capable of carrying a nuclear warhead. Having rounds that are capable of evading radar detection and travelling intercontinentally, not only alters the operational framework on the battlefield, but changes the character of war. With the fires realm changed so drastically, the U.S. must make drastic improvements within its own arsenal to stay competitive. With long-range precision fires as the number one priority of the capabilities gap list, the senior leaders at Fort Sill are undertaking the task of improving the U.S. Army's indirect fire capability.

The Fires Center of Excellence at Fort Sill, Oklahoma, is spearheading the new material developments for the U.S. Army's long-range precision fires. There are multiple developmental programs currently underway, each one intending to develop a material

[22] Scott Boston and Dara Massicot, "The Russian Way of Warfare," RAND Corporation, 2017, 10, https://www.rand.org/pubs/perspectives/PE231.html.

[23] Ibid.

change to level the playing field with Russia and China. The first program underway is the Extended Range Cannon Artillery (ERCA) program.

ERCA is implementing a completely new design for the tube of the M109A7 Paladin. The proposed development includes a cannon tube, which is roughly 50% longer than the current one found on the M109A6.[24] It will slightly decrease maneuverability, but the increase in length will drastically improve the range of the entire howitzer system. The ERCA is expected to take current 155mm howitzer range from 30k to somewhere in between 80-100k. If successful, the ERCA could potentially give the U.S. a much-needed boost in range to maintain competitiveness with Russia and China. However, when coupled with a long-range projectile, like the XM113 or a hypersonic round, the 155mm artillery pieces have the potential to increase their range even further.

The second new class of material developments are extended range artillery rounds. Current efforts are underway to develop the first generation of both precision guided RAM and hypersonic artillery rounds designed to be fired by any 155mm cannon system. Unlike our peer competitors Russia and China, whose current focus is on hypersonic missiles, the United States is placing effort towards the development of hypersonic cannon and missile rounds. These rounds are to be utilized by already-established U.S. Field Artillery platforms at echelons well below the brigade level and are expected to reach the first battalions after the beginning of 2023.[25] This functionality

[24] Sydney J. Freedberg Jr., "Army Will Field 100 Km Cannon, 500 Km Missiles: LRPF CFT," *Breaking Defense*, 2018, https://breakingdefense.com/2018/03/army-will-field-100-km-cannon-500-km-missiles-lrpf-cft/.

[25] Ibid.

at the lower unit echelon is a key difference in the U.S. developmental strategy from that of Russia and China.

The U.S.' ability to use RAM and hypersonic cannon rounds at the battalion level will enable tactical level organizations to destroy operational, or even strategic level targets. In an interview with Breaking Defense Magazine in 2018, the Fort Sill Commanding General, Brigadier General Maranian, stated that hypersonic rounds will be able to reach distances of around 100 kilometers, and will enable the destruction of strategic level targets with surface-to-surface fires.[26]

If this is possible, the pending results could be drastic, potentially changing the traditional relationship seen between the air and land components in a joint fight. First, it will change many of the Air Force's requirements for air interdiction to process strategic-level targets. This change will cause a ripple effect within the Air Force, enabling a potential shift in asset allocation and mission tasking. Assets and platforms previously dedicated to air interdiction missions would be available to place added effort towards the operational goal of either gaining or maintaining air dominance. This can completely alter the operational design used by commanders when planning a campaign.

Secondly, and arguably more important, is the added support these extended-range rounds can offer when in support of air interdiction missions. Previously, the Army relied solely on air assets to process targets beyond the Fire Support Coordination Line. With the new extended range, artillery battalions will have the ability to mass fires in support of, or in conjunction with air assets beyond the Fire Support Coordination Line,

[26] Freedberg, "Army Will Field 100 Km Cannon, 500 Km Missiles: LRPF CFT."

compounding lethal effects on desired operational or strategic-level targets. This enables divisions to shape their own respective deep fight and frees corps fires assets to either focus. elsewhere, or compound lethal effects with their divisions. In short, it adds another level of complexity to an already highly complex environment. Conducting a Suppress Enemy Air Defense mission is difficult enough in the close fight, attempting to do it past 100km requires a different level of coordination, one the Army is not necessarily prepared to support. The level of complexity this adds to a high-intensity conflict will require expert acumen to be able to execute fires safely and effectively.

Along with artillery rounds, the Army is also developing additional range capabilities for their current rocket and missile systems. Army rockets, called Guided Multiple Launch Rocket System (GMLRS), can range 70-80km. With the increased range of the ERCA program, pushing RAP rounds out to 80-100km, the need for using the more expensive GMLRS theoretically no longer exists. Therefore, the new extended range GMLRS was created. The GMLRS-ER is expected to reach circulation with Army MLRS battalions in 2022. Their max effective range is expected to double their current capability, reaching out to 150km.

In turn, the U.S. Army Tactical Missile System (ATACMS) is being replaced due to the increased range of the GMLRS-ER. Currently, the ATACMS can range targets out to 300km. The new system, the Precision Strike Missile (PrSM), is under development by Lockheed Martin and is expected to range distances out to 500km. The new PrSM is lighter and smaller than the current ATACMs but has the same destructive and kinetic capabilities. However, being lighter and smaller allows two missiles to be loaded and fired by the same HIMARS or MLRS launcher. This feature increases the overall

lethality of the platform and enables commanders the flexibility to destroy two strategic targets at near simultaneous. intervals. In order to keep fires echeloned with range, when one system drastically increases, all other systems much subsequently follow suit. The U.S. Army increased the range of 155mm systems with the ERCA program and that necessitated the increase in both the rocket and missile range. Now, with these new developments, Army fires will be echeloned at depth, capable of engaging targets from distances equivalent to the range between Maryland and New York.

The last major material development underway is found within the Paladin Integrated Management program. Within the Paladin Integrated Management (PIM) program, engineers are attempting to improve the Paladin platform's overall performance as a mobile artillery system. The current proposal is to completely revamp the chassis of the M109A6. The current A6 chassis is extremely antiquated, being developed and implemented prior to the U.S. involvement in Vietnam. Besides the electronics and fire control systems, there have been relatively few developments and improvements since its initial inception. The proposed change is to scrap both the chassis and engine in the current Paladin and replace it with that akin to an M2 Bradley Fighting Vehicle.[27] The desired end-state behind the PIM is to increase mobility and survivability for artillery units in a heavily contested, counter-battery environment.

Having the range and mobility of a Bradley Fighting Vehicle will enable Paladins to move faster, quicker, longer, and will allow access to terrain previously inaccessible

[27] Sydney J. Freedberg Jr., "Paladin PIM: The Little Cannon That Could & The Future of the Armored Brigade," *Breaking Defense,* 2015, https://breakingdefense.com/2015/04/paladin-pim-the-little-cannon-that-could-the-future-of-the-armored-brigade/.

due to capability limitations. It will collectively increase a unit's survivability by allowing Paladins to displace more quickly after firing and travel more efficiently within their Position Area Artillery. Furthermore, it would give the added benefit of enabling artillery units to, if required, maneuver and maintain tempo with the maneuver elements they are supporting. This could potentially prove paramount during offensive operations or a mobile defense. The increase in maneuverability for the Paladin will change the way Brigade and Battalion commanders fight artillery. With the added mobility of an M2, commanders at all echelons will have more capable and more responsive surface-to-surface fires.

This drastic increase in capability alters the operational framework and design within a theater. With maneuver brigades potentially ranging 100km into the battlefield, what the U.S. Army currently refers to as the "close" and "deep" areas will shift. With a shift in zones, comes a shift in targeting responsibilities. What was previously considered a corps target can now be a division target, a division target, now a brigade, and etcetera. This ripple effect will cause changes in asset and resource allocations as well as force structure and taskings. It will affect the entire joint force. If the Army is not prepared to adapt and fight with these dramatic changes, the benefits gained with extended range and hypersonic rounds will be moot. To utilize this increase in technology correctly and to its fullest potential, new doctrine and new tactics, techniques, and procedures (TTPs) are required, and their implementation at the battalion level cannot be overlooked. Currently, in the Field Artillery, there are no doctrinal experts qualified to execute those tasks.

The system of analysis and doctrinal framework the Army uses to determine how to effectively resource a change, the DOTMLPF-P process, represents eight venues from

which a change can originate: Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities, and Policy. In the next few years, U.S. Field Artillery units will wield newly developed material weapon systems that can impact each domain within the Multi-Domain environment. Oftentimes, with new material developments, and specifically with weapons and weapon systems, there arises the need for an accompanied change with either organization or personnel in order to compliment that new development. However, with this recent increase in weapon technology, there has yet to be a proposed alteration to the organizational or training structure which supports and facilitates the change. To use a rudimentary analogy: when one drastically increases the power to an engine of a car, without changing the transmission, driveshaft, rear axle, and gear ratio, the car will not function properly. The fires community is increasing the power to the engine and is completely neglecting the rest of the drivetrain.

With the advent of new weapons systems significantly increasing the range of fires, the Multi-Domain battlefield is also becoming increasing more complex. Tactical-level units can now effectively engage operational or strategic-level targets, thus. making the delineation between the tactical, operational, and strategic areas of the battlefield less defined. The field artillerymen controlling fires are unprepared and untrained for this shift in operational framework. The necessity to be able to plan, coordinate, and execute joint fires through and within each domain is already present, and there are no Field Artillery officers certified or qualified to conduct the task. This uneven growth will result in added complexity to the joint fires arena. If Field Artillery officers are required to take ownership of joint fires at the tactical and operational level, before they can coordinate fires with other domains, they must first become an expert at fighting within their own.

When the ERCA, RAM, hypersonic and PrSM programs reach the force, it is probable that cannon or rocket battalion commanders are completely untrained with the weapons they are expected to employ. If doctrine is not concurrently updated along with the material developments, or if there are not trained personnel entering the force juxtaposed alongside the new materials, commanders and integrators cannot be expected to fight their formations effectively. With the drastic and continuous. increase in artillery capability, there needs to be a tactical expert dedicated to maintaining current artillery TTPs, serving as the Field Artillery joint fires planner.

The Army is Untrained at Joint Fires

It is no secret that the U.S. Army struggles with joint fires. Since the opening of the National Training Center at Fort Irwin, and its deliberate practice of joint force integration, CTC evidence shows the Army struggling to fluidly conduct joint fires. There are numerous. studies and scholarly articles dedicated to understanding the complexity of the subject, and there is an entire realm of doctrine labeled "joint," whose efforts attempt to codify the process. Still, the Army struggles with joint fires. There are two primary reasons for this insufficiency. First, the past two decades of counter-insurgency operations left field artillerymen, and the Army as a whole, significantly untrained with fires. Secondly, the service members in control of joint fires are grossly untrained on the joint weapon systems they are using.

The U.S. Army fought a counter-insurgency war in Iraq and Afghanistan for over two decades. The negative effects of fighting an 18-year COIN war are numerous, to say the least, but one negative effect not shared holistically throughout the Army was the degradation of fires. Due to the inherent nature of a COIN battle, the need for field

artillery, an indirect fire area weapon system, is lessened drastically. This is likewise amplified if the friendly force has established air dominance. If the air is saturated with friendly aircraft, the number and complexity of restrictions placed on surface-to-surface fires increases drastically. As a result, the propensity for indirect fires is lessened, and the difficulties encountered when firing artillery outweigh the results. This lack of demand for artillery fires caused the skills of the artillerymen across the force to atrophy throughout the duration of the war. MAJ James Landeaux captures this in his summary during his CTC research in 2017:

> The artillery skills during OIF and OEF atrophied from the non-traditional missions. Fire supporters were faced with the challenge of training on fundamentals in Unified Land Operations (ULO) while executing decisive action. During this transition from COIN to ULO, the Artillery Branch continued to improve innovations in doctrine and technology that would further the gaps in experience, leadership, and training . . . The ability to synchronize and integrate warfighting functions becomes difficult for BCT commanders as they now face experience, leadership, and training gaps. The result from the non-traditional mission sets continues to strain the core competencies of the leaders and soldiers, as observed from CTCs.[28]

This general atrophy within the Fires community had effects on the confidence in Army leadership as well. Commanders at echelon did not have faith in the fire supporters to provide safe, timely, and accurate fires, except if delivered by precision guided munitions. This lack in faith from BCT commanders pushed the drive for cannon artillery fires down, thus, also contributing to the proficiency gap within the branch. As a result, an entire generation of maneuver commanders learned to accept artillery as generally ineffective and relied on it only as a last resort. These same maneuver commanders also became too comfortable with airpower. With the overwhelming air dominance only

[28] Langdeaux, "Optimizing Artillery Fires at the Brigade Level," 3.

achievable in a COIN fight, maneuver commanders lost the need for true air-to-ground integration and coordination because they could conduct kinetic air strikes at will. They became accustomed to their strike limitations consisting only of aircraft availability, and became dangerously reliant on receiving aircraft support within minutes of declaring "troops in contact."[29]

As a result of these lackadaisical habits formed during a COIN conflict, there is a generational loss of knowledge within the Field Artillery branch and with those who coordinate fires. The soldiers and officers who conducted maneuver or other ancillary missions during OIF and OEF lost their overall ability to effectively conduct surface-to-surface fires, and the maneuver commanders lost the need for true joint fires integration.

The second reason the Army is largely untrained in joint fires is due to the simple fact that the Army officers are not certified on the weapons they are attempting to integrate. It is impossible for anyone to plan to a level of extreme effectiveness if they do not have an intimate understanding of the weapon systems with which they are planning. This holds especially true when considering the complexity and intricacies of a multi-domain environment. Too often are individuals placed into positions where they are required to "figure it out" because of lack of training. This should never happen with the personnel in charge of joint fires integration due to the potential for catastrophic consequences resulting from the mismanagement of fires and because of the potential for those negative effects permeating outside the originating branch and into the joint force.

[29] Langdeaux, "Optimizing Artillery Fires at the Brigade Level," 32-33.

A clear example of this type of mismanagement using unqualified personnel is with the J-3 being in charge of the Joint Fires Element (JFE) as is dictated in JP 3-09.

> The J-3 is the JFC's principal staff advisor to coordinate the interaction of all fire support system elements, including TA, C2, and attack/delivery systems… Additionally, the J-3 will integrate and synchronize joint fire support with other joint functions of C2, information, intelligence, movement and maneuver, protection, and sustainment. The J-3's joint fire support responsibilities may include . . . Conducting joint fire support and directing, coordinating, and synchronizing fires. The J-3 requires a broad understanding of the strengths and limitations of each Service and functional components' capabilities, as well as interagency, international, and multinational capabilities, and a clear understanding of how they might be applied and integrated.[30]

Unless the J-3 is a Field Artillery officer, they will be grossly unqualified to execute the job of coordinating fire support. Even if they did have a fires background, unless they are intimately familiar with joint weapon systems and functions, they will still be unqualified to integrate joint systems, and will likely be unsuccessful until they "figure it out." Nowhere in the publication does it list or even mention the necessary qualifications for a J3 or a fire support coordinator prior to them taking the job, and therein lies the problem. It does mention that they need an "…understanding of the strengths and limitations of each Service and functional components' capabilities, as well as interagency, international, and multinational capabilities, and a clear understanding of how they might be applied and integrated."[31] But this is hardly sufficient for executing what is required for true coordination and fires integration.

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[30] Chairman of the Joint Chiefs of Staff (CJCS), Joint Force Development, Joint Publication (JP) 3-09, *Joint Fire Support* (Washington, DC: Joint Chiefs of Staff, April 2019), II-4-5.

[31] Ibid., II-5.

The J3's main advisor for fires is the Joint Fires Element Director. This position could arguably be the most critical to successful joint fires operations. However, this vital position held by the Joint Fires Element Director has only two specified tasks: Advise the J3 and schedule/synchronize JFE meetings. The lack of deliberate thought behind the command and control of the JFE offers valuable insight to the Army's thought-process behind joint fires effectiveness.

A good example to show the positive effects a fires coordinator can have when properly trained and qualified on the systems they are integrating is a battalion FSO. Before becoming a battalion FSO, the officer should first progress through their time as a lieutenant, being a Fire Direction Officer or a gun line Platoon Leader, or both. Being an artillery Fire Support Officer (FSO) in a maneuver battalion after being a Platoon Leader on the gun line is paramount to successful fire support planning for that maneuver battalion. When the FSO arrives at the battalion, they do not have to "figure it out" because they have already done what they are coordinating.

Because a Platoon Leader is certified and qualified on digital fires, fire support, and the Artillery Skills Proficiency Test, they do not just understand the white-page aspect of artillery; they have a detailed understanding of how the gun line and the artillery process works. Having this intimate knowledge gained through training and experience is an invaluable asset to the maneuver commander. That FSO would know the minute details that could potentially make all the difference. Knowing how complacent a gunner gets when not given an "end-of-mission" call, knowing the hydraulic strain caused by an "at-my-command" instead of a "do-not-load" request, or understanding the impending loom of a cross-carriage shot with 4H in a Paladin, could potentially make the

difference in a brigade-level fight. The Army expects this level of understanding with an FSO at the battalion level, the same expectations should exist with the fires coordinators working at echelons above brigade.

To integrate properly at the joint level, a detailed understanding of the weaponry being used, and those using it is necessary. Without this knowledge, the level of integration needed for successful multi-domain operations is not possible. If artillery or maneuver officers are expected to take charge and "own" the planning and execution of joint fires, in order to achieve this level of integration, cross-branch, and cross-service training is required. It is this joint training that is precisely what the Army currently lacks for pipeline artillery officers.

Other than a JTAC or a GLO, there are no options for artillery officers to experience true joint training or integration. Most, if not all, joint Army training is conducted through classes on Army bases and is taught by Army officers. Even the Joint Firepower Course, based out of Nellis Air Force Base and a great example of integrated training, now most commonly operates through Mobile Training Teams at Army installations. Rarely does an artillery officer get the opportunity to train in-depth with the Air Force or Navy at their base locations, or even with a cyber-detachment within an Army Military Intelligence unit. Without these training opportunities, artillery officers cannot be expected to effectively coordinate cross-domain fires, nor should they have the responsibility to "own" joint fires.

Joint Organizations vs. Joint Individuals

The third reason why the Army performs poorly with joint fires is because it fights with joint organizations and not with joint service members. The Army, and the

entire military, is grounded in the mindset of considering "joint" a shared functional requirement and not its own separate branch or MOS.

When conducting joint operations, there are representatives from each service conglomerated and working together in a shared space; examples of this are a Joint Operational Center (JOC) or a JAGIC. The service who owns that joint organization usually dominates with the number of personnel present, making the representation uneven, and each representative is expected to contribute their expertise or "slice of the pie" to the joint fight. Therein lies the problem with the structure of joint fires: put simply, it's too disjointed. Theoretically, if the personnel operating a JOC were all part of the same service of the military, effectiveness would increase, and the requirements for achieving a unity of effort would inherently be cut in half. Army people work with and understand Army people better than the Air Force simply because they are of the same mindset and culture. To most efficiently mesh the capabilities and maximize the effectiveness of the joint force, there cannot be individuals from different military cultures, backgrounds, and experiences attempting to work together in a "joint" environment. Instead, individuals working together who have been jointly trained from the onset of their career and consider themselves "joint" rather than associated with a specific service, is a better key to success and a faster path towards achieving a unity of effort. If one is raised as "joint," they will have a greater appreciation and a better understanding of what joint fires integration requires to be successful.

The JAGIC is another fires construct which amplifies the former points of unqualified leaders and disjointedness, and how they contribute to the Army struggling with joint fires. As defined in ATP 3-91.1, the JAGIC, "provides commanders a

technique to coordinate, integrate, and control operations in division-assigned airspace and efficiently collaborate requirements with external airspace elements outside of the division area."[32] Its functions include integrating, synchronizing, and controlling joint fires, airspace control, interdiction coordination, friendly force identification, and information gathering and can be located at the division and corps level.[33] It is clear the JAGIC has many requirements according to its doctrinal tasks; however, the most important function it can provide division and corps commanders is the control of joint fires. In charge of this process in the JAGIC is the Division Fire Support Officer (FSO), otherwise known as the JAGIC Chief.

> A FSO oversees Army fires operations in the JAGIC and commonly serves as the JAGIC chief. This officer is not only responsible for the fires cell portion of the JAGIC, but also the JAGICs overall performance to integrate airspace users' lethal and non-lethal effects. The selected FSO determines target attack methods, establishes or modifies FSCMs, and oversees fire mission execution.[34]

The FSO is typically a Field Artillery major, and although there are no specific educational requirements to hold the position, the ultimate success or failure of joint fires rests on this individual's shoulders. There is no reason why such a monumental tasked should be placed on a service member with no previous. education or formal training in its execution. If the JAGIC chief is a typical Field Artillery major, then up to the point of taking charge in the JAGIC, they would only have held field artillery positions so far

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[32] Headquarters, Department of the Army (HQDA), Army Techniques Publication (ATP) 3-91.1, *The Joint Air Ground Integration Center* (Washington, DC: Government Publishing Office, April 2019), 1-2.

[33] Ibid.

[34] Ibid., 1-8.

throughout their career, and none of a joint capacity. Typically, Field Artillery officers are not offered in-depth training in cyber, electronic warfare, or air component operations. If training is available at all, it is usually offered as an elective class either at a military college or through an Army online training program. This lack of exposure to these other forms of fires may lead to further negligence or ignorance when that artillery officer is in control of the JAGIC. However, all are components of fires, and would potentially be under JAGIC control. If this is the case, the Chief will be completely reliant on the subordinate JAGIC members to make tactical and potentially even operational decisions on their behalf. The overall risk to joint fires then lies with the assumed competency of these attached JAGIC liaisons, a risk the Army assumes in this current construct.

The JAGIC Chief is responsible for the integration of fires across each domain using the expertise of their fellow JAGIC members. Attempting to establish and maintain a unity of effort with over 24 personnel with different backgrounds in a rapid large-scale combat operations environment is a daunting task regardless of experience. Doing it with no prior joint training and without a knowledge of joint weapon systems is assuming a great amount of risk and is potentially setting the JAGIC Chief and the division and corps commanders up for failure.

Concluding the Problem

The U.S. Army struggles with its execution of joint fires due to two decades of COIN operations, an acceleration in fires technology, a lack of available joint training, and not having the right individuals controlling the joint fires process. To work more efficiently towards gaining a unity of effort in fires, the Army needs to first regain

competency with current-day cannon, rocket, and missile fires while staying current with new systems as they are fielded. Even more importantly, it needs to change its current perception of what it actually means to be joint. There are no opportunities for officers to receive advanced training in joint weaponry, and there is no required cross-branch integration for joint fires controllers. When combined, these three inefficiencies result in a force which can only moderately be successful in multi-domain operations. If winning the next war is reliant upon the execution of cross-domain and joint fires, emphasis on fixing these insufficiencies is swiftly needed.

For those who might disagree and claim the Army is good with the status. quo, it is imperative their arguments be stifled to prevent the curbing of development, ingenuity, and adaptation within the realm of artillery and joint fires integration.

The U.S. Army Weapons Officer: A Solution

The three main problems the Army faces when conducting joint fires can be solved, over time, through the implementation of an Army Weapons Officer. The three main problems: accelerated fires technology, unproficiency with fires, and a one-dimensional view of what it means to be joint, are all solvable with an officer who is a tactical expert in both artillery and joint platforms and who splits their training time equally between the joint components.

Looking through the DOTMLPF-P lens, the Army Weapons Officer necessitates a personnel, organizational, and training level change within the force, and specifically the Field Artillery. It requires a complete force design update, requiring processing through the entirety of the Army Force Management Model and the Joint Capabilities Integration Development System (JCIDS) process. The personnel change reflects the addition of a

new MOS or skill identifier, while the organizational change consists of adding an additional 13-series slot to existing Field Artillery MTOEs. Lastly, a training update is required to facilitate the addition of the joint tactical school, or more formally, the Weapons Officer Course. The Army Weapons Officer would be a joint tactical expert who is designed and prepared to work at the operational level. Their main task would be to integrate, synchronize, direct, and control the planning and execution of joint and multi-domain fires, and their masters-level training at Weapons Officer Course would qualify them to accomplish that singular mission.

The Weapons Officer is not a new concept. Admittedly, the inspiration behind the Army Weapon Officer stemmed directly from the already-existing position in the Air Force. So, to fully understand the direction in which the Army Weapons Officer concept is attempting to travel, one must first begin with an education on its predecessor, the Weapons Officer, or "Patch" from the U.S. Air Force.

The Air Force Weapons Officer

> Weapons Officers serve as advisors to military leaders at all levels, both those in uniform or civilian government positions…Taking the mantra, "humble, approachable and credible" as their creed, they form a fraternity of trusted advisors and problem-solvers that leads the force and enables it to integrate its combat power seamlessly alongside those of other military services.
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> –U.S. Air Force Weapons School, Fact Sheet, July 2017

It is difficult to imagine something that does not already exist. For the Army, the closest comparison it has to an Air Force Weapons Officer is a non-flying Warrant, such as a Radar Chief or a Targeting Officer. However, there are so many differences between Weapons Officers and Warrants that it requires a more in-depth discussion to discern even the most obvious differences which set them apart.

Weapons Officers have more responsibility. Like Warrants, they have few direct leadership responsibilities during their utilization tour; however, unlike Warrants, Weapons Officers, at large, are responsible for the Air Force's execution and performance during a time of war. Both are considered tactical experts and have an intimate understanding of the composition and utility of their respective systems; however, a Weapons Officer's primary task deals not with managing their respective weapon themselves but imparting their knowledge of it to increase the overall competency of the force. Weapons Officer Candidates are chosen from the most qualified members of the branch, not just for their already-high performance record, but for their potential. After graduating Weapons Instructor Course (WIC), while completing their utilization tour, an Air Force Weapons Officer has three primary responsibilities: expertly train the force and maintain Air Force doctrine, guide and synchronize wartime operations, and be the Air Force's primary liaison to members of the DoD.

After a grueling five-and-a-half month experience at WIC where they are taught tactics at a masters level, they enter back into the force armed with the most current and up-to-date knowledge of tactical planning and employment, a passionate work ethic, and an ability to employ standard and non-standard approaches to tactical problems. Most importantly though, they have expertise in their craft which is largely irrefutable by anyone in their unit. They are the Air Force's primary instructors. They are labeled the "instructors of the Air Force's instructors" and serve as the branch's institutional

reservoir of tactical and operational knowledge.[35] Weapons Officers are also the Air Force's primary integrators. It is expected of them to be able to teach and interact with other branches of the Air Force as well as other services in the U.S. military and serve as an informal liaison. Their ability to interact with, educate and liaise with the force-in-whole is partially what makes them such a valuable asset to the Air Force and is critical to the broader scheme of their operational success. However, when on their first utilization tour, they have the main responsibilities for the planning, monitoring, and evaluation of their assigned unit's training, and ensuring that training adheres to the Air Force doctrinal standard. While the commander and the director of operations have overall responsibility for the synchronization and execution of unit training, it is the Weapons Officer who dictates what exactly will be trained, and how it will be executed. To emphasize the Air Force's overall expectations from a Weapons Officer, out of their 31 specified tasks listed in AFMAN 11-415, 19 are directly related to their training responsibilities.[36]

They are also the "keepers" of the doctrine. As stated in the Weapons Instructor Course's own fact sheet:

> The Weapons School cadre also authors tactical doctrine, and conducts tactics validation. Actively collecting tactical knowledge and lessons learned from deployed units, evaluating solutions in exercises, and formally preparing them for application across the force, the Weapons School provides a controlled learning

[35] USAF Weapons School, "United States Air Force Weapons School," Fact Sheet, U.S. Air Force, May 2016, https://www.nellis.af.mil/About/Fact-Sheets/Display/Article/284156/united-states-air-force.

[36] Secretary of the Air Force, Air Force Manual 11-415, *Weapons and Tactics Programs* (Washington, DC: Headquarters, Department of the Air Force, September 2019), 10-12.

> environment and knowledge trust for best practices in air, space, and cyber combat techniques.[37]

As such, Weapons Officers provide academic and advisory support to other units within the Air Force to enhance air combat training on a broad scale. They are renowned for their problem-solving abilities, and this attribute makes them the ideal personnel to maintain the currency of tactical-level doctrine and the TTPs for specific Air Force platforms or functional areas.

The second main responsibility for a Weapons Officer is to guide and synchronize combat operations. When tasked as a Mission Commander, which they often are, they also become responsible for the planning of operations. Contrary to what is seen in the Army, it is the Weapons Officers, not the commanders, who will decide how the Air Force will tactically fight when in a combat scenario.[38]

When at war, a Weapons and Tactics shop is the Office of Primary Responsibility for a unit's combat employment, and when fully manned, consists of representatives from each relative domain. As the head of the Weapons and Tactics shop, a Weapons Officer will continually review, "DOC statements, Operations Plans (OPLANs), and update tactical training and employment procedures," as well as ensure the integration and synchronization of each warfighting function within the shop itself.[39] Being the lead tactical expert and the steward of doctrine, they are also responsible for the dissection of weapons and tactics issues, whether they be malfunctions, deficiencies, corrective

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[37] USAF Weapons School, "United States Air Force Weapons School."

[38] Matthew "Trick" Wilson, conversation with author, September 2016.

[39] Secretary of the Air Force, Air Force Manual 11-415, 8.

actions, or if they did not meet commander's intent. Undoubtedly, the Weapons Officer is the hardest-working individual in an Air Force squadron during a deployment. Their list of tasks is never-ending, and the unit's success or failure rests largely upon their shoulders.

The third main task a Weapons Officer is charged with upon graduation is to serve as the Air Force's primary liaison to the other services of the DoD. Although more often than not an implied task, their level of responsibility and the very nature of their job forces them to be at the forefront of mission planning, especially while in a joint environment. Specifically, for a fighter squadron, a Weapons Officer will be the primary coordinator for the squadron to the other joint entities. Their job is to not only represent and promote airpower, but is also to ensure there is a clear understanding of their role and capabilities and how they can best assist in the joint fight. In turn, they are responsible for relaying the joint commander's intent back to the fighter squadron, ensuring the current tactics, techniques, and procedures in place will accomplish the task at hand.

An Air Force Weapons Officer is an operational-level asset. They are trained to the highest level of education the U.S. Air Force has to offer. Upon graduation, they return to their units to serve as weapons and tactics officers, leading combat missions and providing their senior leaders and decision-makers tactical, operational, and strategic level support.[40] To get there, they must first distinguish themselves within their unit, get selected for candidacy by a panel of Weapons Instructors, and lastly, pass the grueling five-and-a-half-month Weapons Instructor Course at Nellis Air Force Base, Nevada.

[40] USAF Weapons School, "United States Air Force Weapons School."

The U.S. Air Force Weapons School is a premier DoD training institution. Established in 1949 at Las Vegas Air Force Base (now Nellis Air Force Base), the school was initially formed by a cadre of World War II combat veterans dedicated to teaching the next generation of pilots advanced gunnery techniques. "The Gunnery School" shifted its focus from gunnery-centric to combat crew training in order to meet the current operational requirements in the Korean War, and in 1954, assumed the title "USAF Fighter Weapons School." As tactics and technology advanced, so did the school. In the '70s, the Aggressor squadron was added to simulate OPFOR for the pilots in training. In the '80s and '90s, the school added multiple satellite schools as well as branch courses to the main base at Nellis to incorporate newly developed aircraft and emerging mission requirements. As Air Combat Command stood up, and the school expanded to include B-1 and B-52 satellite divisions, the school finally shifted its focus away from being a primarily "fighter centric" institution and adopted the name which currently stands today: The USAF Weapons School.[41]

> The USAF Weapons School trains tactical experts and leaders to control and exploit air, space, and cyber on behalf of the joint force . . . The USAF Weapons School teaches graduate-level instructor courses that provide the world's most advanced training in weapons and tactics employment . . . The goal of the course is to train students to be tactical experts in their combat specialty while also learning the art of battle-space dominance. This ability creates such a complete overmatch in combat power in any domain of conflict that adversaries have no choice but to submit or capitulate.[42]

Today, the Weapons School spans over nine separate locations, maintains a total of 19 squadrons, teaching 26 different Weapons Instructor Courses, four Advanced

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[41] USAF Weapons School, "United States Air Force Weapons School," 3.

[42] Ibid.

Enlisted Courses, and 30 combat specialties. During each Weapons Instructor Course, students receive an average of 400 hours of graduate-level academic and hands-on combat training instruction.[43] The first half of the course, known as Core One, begins with an overall introduction to the Weapons Instructor Course, and consists of and an in-depth study of Air Force and Joint doctrine. The rest of Core One, lasting roughly three-and-a-half months, consists of a core competency training, gradually increasing in intensity from a baseline professional to the expert level. By the end of Core One, the students are technically prepared to enter back into their applicable field and be the resident expert of their respective units.[44]

Core Two also begins with an initial week of academics; however, rather than focusing on their specific MOS, the focus shifts to joint capabilities and integration. This is arguably the most important and valuable part of the Weapons Instructor Course. Their time in Core Two is what makes Weapons Officers so valuable to their senior commanders and so dangerous on the battlefield. The Weapons School uses what they call an "integrated approach." This means the graduates, "…are extensively familiar not only with the weapons platform or system they have been trained in through their career path, but also in how all USAF and DoD assets can be employed in concert to achieve synergistic effects."[45] By focusing intently on the joint aspect of warfare after they become the subject matter experts on their own specific platform, it allows them the best

[43] USAF Weapons School, "United States Air Force Weapons School," 2.

[44] Jake "Flex" Bass, conversation with author, February 2020.

[45] USAF Weapons School, "United States Air Force Weapons School," 2.

perspective of how to best integrate their own system's capabilities in order to achieve a real-world unity of effort.

The last phase of the Weapons Instructor Course is called the Advanced Integration phase. This 5-week period of training incorporates all the previous instruction in the course and culminates with a series of live missions that integrates systems and capabilities from every function in the Air Force and includes weapon systems across the land, air, space, and cyber domains.[46] It is arguably the most stressful time for the students due to the complexity and the sheer amount of work needed to execute the missions; however, it is during this phase where Weapons Officer hone their problem-solving and leadership abilities while becoming increasingly lethal at joint integration.

The Weapons Instructor Course produces Weapons Officers. It is expertly designed to produce tactical experts whose knowledge, technical expertise, leadership ability, communication, and organizational skills prepare them to serve as a unit's chief instructor and to lead an organization's weapons and tactics functions.[47] It prepares them to be a commander's primary tactical advisor and problem solver, ready to execute integrated composite-force operations with joint and coalition partners.[48] Without Weapons Officers, the Air Force would not be as effective as it is today, and the joint force would lose an invaluable asset. Weapons Officers take ownership of their branch's tactical progression. Their knowledge network and expertise within their own craft

[46] USAF Weapons School, "United States Air Force Weapons School," 2.

[47] Secretary of the Air Force, Air Force Manual 11-415, 13.

[48] Ibid.

enables them to raise the overall proficiency of the Air Force, and their vast amount of professional-level joint integration training enables them to coordinate combat operations at a higher level. The Army does not have a Weapons Officer equivalent. If the Army had an individual who was expertly trained at field artillery and had a highly advanced and in-depth education on joint weapon systems and capabilities, the overall lethality of multi-domain fires would drastically increase.

The Army Weapons Officer

ADP 3-19 states that success in large-scale combat operations will be dependent on the Army's ability to employ fires.[49] It follows on to define fires as the "related tasks and systems that create and converge effects in all domains against a threat."[50] It consists of surface-to-surface, air-to-surface, surface-to-air, cyberspace, and EW fires, as well as space operations, multinational fires, special operations, and information operations.[51] As of right now, the Army has no MOS or qualification that can label someone as a "fires expert," and because of this capability gap in one of its major warfighting functions, the Army's holistic ability to conduct joint fires effectively is hindered. To fill this gap, the Army needs a Weapons Officer.

The Army's three main problems with joint fires: technology outpacing doctrine, an unproficiency with fires throughout the ranks, and a one-dimensional view of what it means to be joint, can effectively be mitigated with the proper utilization of an Army

[49] HQDA, ADP 3-19, V.

[50] Ibid., 1-1.

[51] Ibid., 1-2.

Weapons Officer. Being largely based on the Air Force version, the Army Weapons Officer will also be responsible for maintaining and updating the doctrine relevant to the Fires warfighting function. This will ideally lessen the gap between emerging technology and lagging doctrine due to it being a specified task and an enduring function for the Army's primary tactical fires expert. Furthermore, and serving as their main focus, the Weapons Officer will guide and synchronize fires during wartime operations. With their tactical expertise in artillery, air, and cyber/EW, they will be the ideal candidates to integrate systems within the joint fires process at the division and corps levels. Their innate knowledge will give them the confidence and the necessary coup d'oeil to thrive at the Rapid Decision-making Process and will enable them to communicate in the requisite joint language necessary to achieve a unity of effort in Unified Land and Multi-Domain operations. The Weapons Officers will also be inherently joint. Their professional progression and the nature of their schooling will not adhere them solely to Army formations and will break the mold of traditional Army training. While having a base Army background, and under the Army's administrative control, once becoming a Weapons Officer, they will be considered joint operators and will thus become a joint asset. This critical component of their constitution will give them a different perspective from the standard Field Artillery officer and will prove invaluable while executing joint fires.

However, before any of these desired skills can be used, the Army Weapons Officer must first be trained and qualified. Although the fires "umbrella" holds nine different sub-categories, the Army Weapons Officer's training will consist of three separate phases: artillery, air-to-ground, and cyber/electronic warfare, and its end-state

will be turning the Weapons Officer candidate into the joint tactical expert the Army needs.

Ideally, the Weapons Officer will begin with a background in field artillery and will enter the course with an advanced knowledge of indirect fires. Because artillerymen are initiated into the world of "fires and effects" at the onset of their careers, their experiences during their first few years of service will naturally lend them to becoming ideal Weapons Officer candidates. Artillery, being the Army's current predominant form of fires, will be the pre-requisite test for entrance into the advanced educational pipeline of the Weapons Officer School. Like an Air Force Weapons Officer candidate has an advanced training in an Air Force MOS before entering WIC, so too will the Army Weapons Officer with field artillery.

The first phase of the school is advanced artillery education. As a background, the Field Artillery Basic Officer Leadership Course (BOLC) at Ft. Sill, Oklahoma, lasts roughly four months and turns newly commissioned officers into amateur artillerymen. In comparison, the artillery phase of Weapons Officer School, also located at Ft. Sill, Oklahoma, will last six months in duration and will focus on both surface-to-surface and air defense artillery. Its core concentration will be on the technical and tactical aspects of field artillery, including advanced gunnery and AFATDS operations, and will attempt to transition the candidate from an experienced amateur, into an expert professional artilleryman. This phase at Ft. Sill's Fires Center of Excellence will be the critical training that gives the Army Weapons Officer a tactical overmatch on their enemies with indirect fires, knowledge which is beyond reproach, and will be the source of their referent power when sitting at the joint fires table. While most of the Weapons Officer's

time at Ft. Sill will focus on field artillery specifically, two months of the training phase will focus on air defense artillery and the surface-to-air aspect of fires.

Like the BOLC for Field Artillery, the BOLC for the Air Defense Artillery School (ADA) is highly focused on the technical aspects of the branch's three main weapon systems: the Patriot, the Avenger, and the Counter Rocket Artillery and Mortar (C-RAM) system. ADA BOLC is primarily focused on gunnery, and the Lieutenants graduate from the school after successfully completing Tables 1-4 (basic gunnery techniques) and a Reticle Aim Level (RAL) 5 basic air battle simulation.[52] They leave BOLC with what the ADA branch considers a "basic level qualification." Likewise, the Army Weapons Officer will complete a truncated version of the ADA BOLC, focusing on primary gunnery data and the employment of both passive and active air defense techniques. However, instead of ending with a Table 5 RAL, the Weapons Officers will end their two-month training program leading a Table 8, thus gaining experience of working at the intermediate-level. Although the goal of the Weapons Officer is to be a tactical expert when it comes to fires, and not just have a mere "intermediate-level education," there must be a prioritization regarding time and effort within the curriculum. For the Army Weapons School, the main focus of the course's broadening curriculum is with the Air Force and the overall use of airpower. This is solely due to the practicality and the frequency with which the brigade, division, and corps Army levels work with effects from that specific domain.

[52] Steadroy P. Joseph, conversation with author, February 2020.

The second phase of Weapons Officer School will be the air-to-ground phase and will be conducted at Nellis AFB, Nevada. This six-month portion of the training will be split into two sections with three months dedicated to in-class academics, and three months of practical exercises, all taught by Air Force WIC instructors. The availability and use of resources such as the National Training Center makes this phase of the training extremely lucrative and worth-while for the Weapons Officer. They will have both the land and the airspace available to conduct realistic and complex air-to-ground training. Throughout the phase, they will receive an in-depth, hands-on academic training with each primary Air Force platform, and will have the added benefit of complete immersion while conducting their training.

The Weapons Officer's bible for academic studies during this phase will be *AFTTP 3-3.IPE Combat Aircraft Fundamentals Integrated Planning and Employment*. The 3-3 serves as the primary tactical doctrine reference for the Air Force and offers considerations used for the planning and execution of Air Force missions.[53] The best practices found in the 3-3 are the Air Forces "foundation of employment and standardization for all USAF weapon systems,"[54] and, as such, provides the backbone of the curriculum requirement for the second phase of the Weapons School. Its topics range from the tactical employment of air packages and airframes to targeting working groups and mission command concepts to the theories behind how Air Force commanders assume risk. It is this level of detail and intimate knowledge the Weapons Officers need

[53] Secretary of the Air Force, *Air Force Tactics, Techniques, and Procedures 3-3.IPE* (Washington, DC: Headquarters, Department of the Air Force, August 2018), i.

[54] Ibid.

to gain during this phase, which is imperative for them to become truly joint. They will not be able to achieve this understanding through studying joint doctrine alone.

The second portion of the air-to-ground phase will be hands-on mission planning and execution. As in the Air Force WIC, this phase will be similar in nature to the Advanced Integration phase and will offer the student the opportunity to combine all their previous lessons into practical, real-world exercises. The National Training Center at Ft. Irwin, California, has the capability to conduct Close Air Support and Air Interdiction missions, and the airspace surrounding Nellis can facilitate the remainder of air-to-air and air-to-ground mission-sets required for graduation.

The air-to-ground phase of the Army Weapons Officer School is arguably the most important phase of the overall training. It is the first opportunity a Weapons Officer candidate has to train in a fully joint environment and see the military from a different perspective. Not only will the students receive an incomparable experience working with the Air Force and solely with Air Force instructors, but they will receive portions of the best tactical education the Air Force has to offer. The expansive knowledge of airpower and the expert tactical knowledge of air-to-ground integration the Weapon Officer gains while studying at Nellis AFB will enable them to more succinctly and ably coordinate for joint fires on the battlefield in future assignments.

The last phase of Weapons School training is cyber and electronic warfare (EW) training, located primarily at Ft. Sill, Oklahoma, but involving a total of four different military stations. Like the other phases, it will also be six months in duration and will offer the Weapons Officer advanced knowledge of both offensive and defensive cyber and EW capabilities.

The first three months of training will be located at Ft Sill's Fires Center of Excellence, where the Weapons Officer will proceed through a similar version of the already-established 17E AIT. Like their nine-week AIT, the overall goal of the training will be to produce an officer who understands how to manipulate and utilize the electromagnetic spectrum to enable joint fires and operations, and to deny its use to the enemy.[55] The three-month course will encompass the broad spectrum of all EW aspects but will place direct emphasis and focus on the targeting aspects of EW, i.e., jamming and detection, and less on protection and countermeasure operations. The EW portion will culminate with a large-scale table-top exercise that emphasizes the use of EW within the joint fires arena, focusing on the synchronization and integration of applicable jamming and detection techniques.

The last portion of this phase, and of the entire Army Weapons School, focuses solely on cyber, applicable U.S. capabilities, and potential future use and relevance on the battlefield. This phase is positioned last in the pipeline deliberately due to the length of time it takes to gain access to the NSA and their myriad of networks used for training.[56] This portion will last three months in duration, and although the preponderance of the time will be located at Ft. Meade, Maryland, there will be extensive time and study at the U.S. Navy's Center for Information Warfare Training at Corry Station, Pensacola, Florida. The training will start out with the basic, civilian-level educational courses

[55] Rod Powers, "Army Electronic Warfare Specialist," *The Balance Careers,* October 03, 2018, https://www.thebalancecareers.com/military-careers-in-depth-electronic-warfare-specialist-3345995.

[56] Bryan Norrell, conversation with author, February 2020.

giving an introduction to the world of cyber. Certifications in such classes as A +, Network +, and Security + will be required prior to the training in Corry Station. Once at the naval station, they will be required to take the Joint Network Attack Course (JNAC) and the Joint Advanced Cyber Warfare Course (JACWC). The JNAC is a 20-day course that will teach the Weapons Officer the common core knowledge and skills to be able to plan and support cyber-attack operations. It includes, not only the physical education of how to conduct a cyber-attack, but also the battle damage assessment, de-confliction, targeting, and weaponization processes.[57] Likewise, JACWC is a four-week course that covers much of the similar topics as JNAC, but with much more depth in the organization, role, and responsibility of USCYBERCOM. During the last phase, the Weapons Officer will travel to Ft. Belvoir, where they will be enrolled in the Army Cyberspace Operational Planners Course. Here, the two-week class focuses on preparing students for multi-domain cyberspace operations. It includes education on cyberspace attack, cyberspace ISR, cyberspace, cyberspace defense, and operational preparation of the environment across all levels of war. It also focuses specifically on the integration of cyberspace operations into the Army and Joint planning process, which is extremely applicable to the overall end-state of the Weapons Officer.[58] The last two weeks of the cyber training will consist of joint integration training with a National Mission Team. Here, the Weapon Officer will benefit from hands-on, real-world interaction with the

[57] U.S. Marine Corps, "MARDET Corry Station: Marine Aviation Training Support Group 21," accessed February 01, 2020, https://www.trngcmd.marines.mil/Units/Southeast/MATSG-21/MARDET-Corry-Station/.

[58] Bender, "The Cyberspace Operations Planner."

Nation's premier cyber teams and will, again, gain a joint perspective not commonly seen from members outside the cyber operations and intelligence communities.[59]

Summary

The Army Weapons School is a one-and-a-half year-long educational and training pipeline that produces the most lethal fires officers in the world. Its goal is to provide the joint force with an operational asset who is a qualified tactical expert on both joint fires and the joint fires process. Having gained a world-premiere education through the highest quality instruction the U.S. military has to offer; the Army Weapons Officer will help solve the three main problems identified with joint fires. The advanced gunnery and AFATDS education they gain at Ft. Sill's Fires Center of Excellence will help the overall branch regain its proficiency with artillery fires, and their responsibility to maintain fires doctrine will ensure the gap between emerging technology and the current ADP remains small. Secondly, the experiences and training they receive on both air and cyber/EW platforms will qualify them to operationally and tactically plan with those specific systems and will ensure a high level of technical proficiency when involved in the joint planning process. Lastly, rather than focusing on bringing different people together, the Army should create individuals who are inherently joint from their beginning, refining their joint skills through their training and experiences. Weapons Officers' experiences during their training and follow-on assignments will ensure that the alternate perspectives of each of the joint forces are represented, and that the Weapons Officer remains inherently joint.

[59] Bryan Norrell, conversation with author, February 2020.

"Success in large-scale combat operations is dependent on the Army's ability to employ fires."[60] To plan and integrate joint fires effectively, a unity of effort with fires needs to first be established. The only way to accomplish this is with a leader who can inherently combine all aspects of joint fires, and effectively project that perspective into an operational plan. The Army needs a Weapons Officer.

Challenges and Shortcomings

The Weapons Officer is not the solution; it is a solution for the conundrum of joint fires integration. While countless articles and studies conducted in the past managed to successfully pinpoint the causes of many joint fires failures, the installation of a Weapons Officer finally offers a solution. This is not to say it is the perfect solution, however. Many arguments can be made against their development. However, before those can be discussed in-depth, a clear understanding of how the Army Weapons Officer will be utilized needs to be conveyed.

The Army Weapons Officer will be used in a similar, yet ultimately different fashion than that of their Air Force counterpart. First and foremost, when the Army is at war, they will not tactically control all aspects of the fight. This right is reserved for commanders and commanders alone. They will, however, have the authority to integrate and authorize fires at the division and corps levels. They will take the operational responsibility of either the Fire Support Officer/JAGIC Chief or will assume control and responsibility of the JFE. Their main objective during a time of war will be to take the mission, commander's intent, and desired end-state, and work within those boundaries to

[60] HQDA, ADP 3-19, V.

create synergistic effects through joint fires integration and to achieve an operational unity of effort towards reaching that desired end-state. Simply put, they will achieve mission success through the implementation of effective joint fires.

Weapons Officers will steer clear of unit qualifications. Commanders will control certification and qualifications at their respective echelon. While Weapons Officers may be writing the doctrine, commanders will have the authority to implement it within their organization. This also applies to instruction. Unlike their Air Force counterparts, Army Weapons Officers' primary role will not be as instructors. In the Army, the depth, intensity, and duration of unit training needs to be tailored according to the specific needs of each individual unit, not the needs of each individual, as is seen with the instruction of a pilot. Understanding the dynamics of that specific unit is paramount to their understanding and absorption of the material, and is therefore a task best accomplished by the respective commander. While an Air Force Weapons Officer's primary mission is to instruct the force, the Army Weapons Officer's mission will be solely to conduct joint fires.

A third difference is, unlike the Air Force, the Army Weapons Officer will not be utilized at the battalion level. There will be two Weapons Officer slots organic within each corps and division, with the expectation for them to be task organized, as needed, to the brigade level. While their primary tasks during a time of war will be most likely in the division/corps fires cell or DIVARTY JAGIC, the preponderance of their home station training efforts will be working at the brigade level. This way, the "train-the-trainer" concept may be applied, and the vast amounts of multi-functional and joint tactical knowledge the Weapons Officer possesses permeates down to the battalion level.

The last difference found between the Air Force and Army Weapons Officer is that the Army Weapons Officer will not be specialized in just one system, but will have three different tactical qualifications. While each Air Force WIC focuses on one sole platform or function, the Army Weapons Officer School will focus on artillery, air-to-ground, and cyber / EW. As a result, the Weapons Officer will be expected to be able to conceptualize a joint fires battle using the technical and tactical knowledge they gained throughout their training and broadening experiences.

Now that there is a clear understanding of how an Army Weapons Officer will be operationally utilized, the arguments against it can be discussed in full. As it is seen, there are four main arguments that can be presented against the development of the Army Weapons Officer. The first revolves around the concept of a duplicate or overlapping effort with fires personnel, specifically the Warrant Officers.

Some may claim targeting officers, or 131As, are too similar in concept and makeup as a Weapons Officer due to their tactical expertise and may infringe upon their duties and responsibilities. To be clear, the Army Weapons Officer is not trying to replace any 131A position, or take over any of their inherent responsibilities. Weapons Officers will assume the role of the Fire Support Officers in charge of tactical joint fires. The intent is to utilize Warrant Officers as they currently are, supplementing the tactical direction of their appropriate echelon. With the knowledge and experience of a CW3 or 4 combined with the joint makeup and training of a Weapons Officer, division and corps fires will become infinitely more lethal. However, the fact remains, Warrant Officers are traditionally considered “tactical experts” just as the Weapons Officer, and have just as much referent power within their organizations.

Also, by the time most Warrant Officers reach the division level, they are already qualified with most of the joint fires courses available in the Army. There are a multitude of joint courses available at Ft. Sill which cover joint material: Joint Fires Course, Joint Operational Fires and Effects Course, Joint Intermediate Target Development Course, etc. All these courses will undoubtedly cover some of the same material as one would find in the Weapons Officer School. The Army Multi-Domain Targeting Center (AMDTC) can also be considered a very close description to the actual Weapons Officer School itself. "The Army Multi-Domain Targeting Center executes cross-domain, cross-warfighting function doctrine, organization, training, material, leadership and education, personnel, facilities and policy integration responsibilities for targeting; establishes Army Targeting and joint fires standards and requirements…".[61] However, what these schools and the AMDTC are lacking is the cultural immersion experience of training in a cross-service environment.

The second question pressed against the Weapons Officer concept is how they will interact with the Fires Chief or the senior fires leadership within the corps/division. There is an enormous cultural difference between the Air Force and the Army which allows a Weapons Officer holding the rank of Captain or Major inform an O-6 what he or she will do tactically with their unit. As witnessed during an Air Force Weapon's Officer visit to an Army brigade's TOC during an NTC rotation, their opinion mattered just as

[61] Fires Center of Excellence, "Army Multi Domain Targeting Center Multi Domain Operations," U.S. Army, accessed February 01, 2020, https://sill-www.army.mil/amtc/.

much as every other Major's did in that TOC; i.e., their opinion was just that, an opinion; not an informal directive.

However, a brief explanation may shed light on the expectation for the Army Weapon's Officer's relationship with the senior commanders in the formation. The Weapons Officer will take the tactical decision-making and planning responsibilities from the Fires Chief and will utilize the Chief's experience and rank to ensure their concept is operationally acceptable and properly channeled to the lateral and higher maneuver echelons. The Weapons Officer will have substantially more recent tactical fires experience than the Fires Chief; ergo, it is prudent and right for them to tactically be in control of fires. This is the aspect most shared with the Air Force Weapons Officer. An anecdote to offer an example of this relationship would be the execution of the air support package planning for the U.S. Navy's strike on Syria in April 2018.

The request for an air support package was given to the 31st Fighter Wing Operations Group Commander (an O-6) out of Aviano Air Base, Italy, and it was his responsibility to plan and execute the mission given to his wing. He notified the Squadrons of the mission and relayed the particulars to the applicable Wing leadership. During the 48-hour mission planning time-frame, the most senior Weapons Officer in the wing was the mission commander, and with the input of other Weapons Officers, devised the mission package and execution parameters to support the strike in Syria. While the Wing Weapons Officer was doing the tactical mission planning for the strike, this allowed the Ops Group Commander more time and flexibility to accomplish other tasks and coordinate laterally and with higher echelons to ensure the necessary resources and assets were available and in place. While still being involved with the tactical planning, it

was not his primary responsibility. Upon completion of the plan, it was the Commander who gave the approval and took the overall responsibility of the mission's success or failure.[62] This perfectly shows the balance of responsibility between a Weapons Officer and a Commander, or in the Army's case, a Fires Chief. The Fires Chief is, undoubtedly, the senior authority for fires in the division and corps, but gives the Weapons Officer the power and leeway to solve their tactical problems and conduct mission command.

The last challenge posed to the idea of a Weapons Officer is the argument of it being an additional skill identifier (ASI) rather than an MOS. An artillery officer could go to the course and come back still an artillery officer, but with a badge, or a patch, or extra digits after their 13A MOS. This would certainly be an easier solution than creating a new MOS and career field. However, there are multiple problems with this approach.

First and foremost, making Weapons Officer School a course and not an actual school or pipeline will diminish its importance and the overall importance of joint fires. If there can be an entire school dedicated to joint fires, like the Qualification Course is for Army Special Forces, it will amplify the importance of the overall task at hand. If not, then it will just be another notch on a 131A's mile-long school belt. Secondly, when a military member attends a school that is over a year in length, given the amount of time and resources put into the education, it should alter their career path into that of a functional area, or equivalent. Lastly, a key component for the Weapons Officer's constitution is their inherently joint nature. Their mentality needs to be that of a joint fires officer, not an Army artilleryman. If at the end of the course, the graduate remains

[62] Matthew "Trick" Wilson, conversation with author, February 2020.

functionally status quo, they will lose this critical characteristic, and the Army's current perception of "joint fires" will continue.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The Army Weapons Officer is a novel idea that is designed to improve the joint fires process for the Army. Through its implementation, it will hopefully solve some of the issues the Army is currently facing, and better prepare it for tomorrow's war. The three main problems with joint fires are the outpacing of doctrine by technology, an unproficiency with fires throughout the ranks, and a one-dimensional view of what it means to be joint. The U.S. Army Weapons Officer mitigates each of these potentially harmful shortcomings.

By being the tactical expert of joint fires and becoming responsible for the maintenance of fires doctrine, the propensity for there being a gap between doctrine and technology will be greatly lessened or eliminated altogether. Though their education at the joint Weapons Officer School, they will emerge tactical experts in artillery, air-to-ground systems, and cyber/EW operations, and will be qualified to coordinate and integrate these multi-domain weapon systems to maximum effectiveness. Their follow-on assignments within each domain will ensure their joint background and culture is established, avoiding the traditional Army stove-piped branch progression. This will enable them to effectively communicate with the fires members of each domain.

Being placed in control of the JAGIC, JFE or any fires control element at echelons above brigade, the Army Weapons Officer will ensure a fluidity of fires is established and maintained, and they, unlike the current maneuver or Field Artillery

officers in charge, will have the propensity to establish an overall unity of effort for the Joint Force Commander.

Recommendations for Implementation

There are two primary recommendations for the implementation of the Army Weapons Officer. First, it is recommended that a Weapons Officer stem from either a post-command Field Artillery captain or CW2 Targeting Warrant. The reason behind these choices is the requirement for an in-depth level of understanding with fires, or at least artillery, before the candidate attempts to become a joint tactical fires expert. Both 13A and 131As can fit that bill. The time-frame during which they are chosen for candidacy is just as important. If chosen while a lieutenant or junior WO1, they will lack the operational experience desired in a Weapons Officer; if chosen too late, their utilization tour may not be fulfilled prior to the 20-year mark for retirement. This serves as the justification behind the post-command timeframe for 13 series candidates and post brigade time for 131As.

The second recommendation is to begin implementing the Weapons Officer construct as an ASI. This recommendation is made for two reasons. First, the Army will be more open to a change if that change causes the least amount of friction. If taken to the extreme, the Weapons Officer concept could indicate a new service of the military called "Joint." Even the thought of establishing a new MOS would probably meet raised eyebrows in the Army Requirements Oversight Counsel, let alone a new service. This is not the intent. By beginning as an ASI and gradually, over time, transitioning into its own separate MOS, Army leadership will likely be more inclined towards its implementation because it causes the least amount of friction to the Army's current sense of normalcy.

This also holds true for the Weapons Officer School. The baseline skeleton for the Weapons Officer School is already found in the AMDTC. The author recommends the AMDTC change its name to the Weapons Officer School and inherit the additional duty of producing Army Weapons Officers in accordance with this thesis' guidelines for a Weapons Officer's education.

The last reason to begin the Weapons Officer concept as an ASI is to mitigate the overall risk assumed with instituting Weapons Officers within the force. While this concept may work in the present day-and-age, like the MRAP, it may lose relevancy over time. If after implementation, the Army decided it no longer needed Weapons Officers, it would be far easier to cut the losses if it were just a school and not a school, plus an entire MOS. However, if that proved to not be the case, the framework would already be in place to easily transition Weapon Officers into their own Functional Area of service. Therefore, and much to the chagrin of the author, the proverbial "toe-in-the-water" approach should be taken, and the Weapons Officer qualification be started as an ASI.

Recommendations for Follow-on Research

The author recommends two separate topics for follow-on research. The first topic is the Weapons Officers Course itself. More research will need to be conducted in order to flesh out the details of the Weapons Officer Schools. Curriculum by phase, teaching and selection standards, mottos, and educational standards all need to be established, as well as the monetary and hands-on training requirements.

The second topic for continued research concerns the Weapons Officer's career. A detailed thesis concerning an Army Weapons Officer's career progression would benefit and perpetuate the overall idea. The three follow-on assignments a Weapons

Officer needs to ensure they maintain a joint perspective consist of periods with the Air Force, Military Intelligence / NSA, and the Field Artillery. Providing details on what these follow-on assignments consist of will be greatly beneficial to understanding how a joint mentality is maintained, and will aid in managing the expectations of Army officials prior to approval.

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