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14. ABSTRACT

As a supporting arm, Marine artillery has one role: to provide indirect fires in support of maneuver. Providing successful close and continuous fires is contingent upon on a network of capable individuals who fully comprehend their specific role within the artillery system. Fire supporters must be able to best advise a supported commander on the employment of fires and plan those fires in support of the maneuver plan. Those responsible for providing fires, emplacement, employment, and sustainment of the firing unit bring a host of problems that inexperienced officers find challenging to overcome.

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MASTER OF MILITARY STUDIES

THE MARINE ARTILLERY OFFICER: "JACKS OF ALL TRADES" vs. EXPERTS IN FIRES

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
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Executive Summary

Title: The Marine Artillery Officer: "Jacks of All Trades" vs. Experts in Fires

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Thesis: Dividing Marine artillery officers into two career tracks – fires planner and fires provider – will produce experts who can better advise a supported commander on the use of fires or best employ the assets that will provide those fires.

Discussion: The Marine Artillery Officer wears many hats. In a firing unit, they perform many tasks, from employing the battery to conducting fire direction and every implied task in between. As a fire supporter, artillery officers plan and execute the fires plan for the supported commander. Under the current manning construct, there is little time allotted to build a proficient officer on either side of the artillery coin. More often than not, the community produces officers who understand just enough to accomplish a task before moving on to the next assignment. This paper examines how the formal learning center produces artillery officers, their potential use during their first assignment, previous calls for change within the community, and the future changes required to usher in the future of fires.

Conclusion: The need to change how artillery officers are employed will still be a concern under the future construct. Officers must be proficient in a particular track – fire support or fires provider – to best plan for fires or employ the weapon system. If the artillery community does not address these changes, it will continue to produce jacks of all trades who will find difficulty driving innovation.

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

This paper's idea originated through my observations that the artillery community misses opportunities to cultivate true experts on either side of the fires coin. Early on, 0802s learn that "we do windows" and adjust to fill any billet within the surface fires spectrum. Young lieutenants often find themselves bouncing between fire support and battery billets, plugging gaps in manning as they present themselves. Unless the Battalion had identified a battery or fire support team for deployment, each unit's officers did not usually have enough time to build upon recent progress and move forward with new ideas. It seemed as if units were in a constant state of rebuilding or returning to the "crawl" phase.

As a schoolhouse instructor and course manager, I had the fortunate opportunity to become intimately familiar with the amount of information that young artillery officers receive. Even with a relatively long course, these officers are still only exposed to the basics. Once an officer arrives in the Fleet, it is a partial game of chance to utilize much of that education.

As a battery commander, I supported the Unit Deployment Program (UDP), serving alongside other commanders who had been in their positions for an extended period. Compared to batteries with new leadership or quick officer rotations, units with longevity in leadership often performed better than those who deployed while in the early stages of "norming."

As the operations officer, I was fortunate enough to have the opportunity to improve upon lessons-learned for the Battalion through multiple iterations of service-, division-, regimental-, and unit-level exercises. With continuity in staff, the unit maintained its high operational tempo with undue friction caused by constant turnover.

Though this paper does not provide the panacea to the manning issue, I hope it starts a meaningful discussion on the topic. With all the pending changes, there is an opportunity to identify ways to cultivate experts, retain talent, and drive innovation within the community.

I want to thank LtCol Kenny Jones for the opportunity to serve in the jobs that gave me the perspective to write this paper; Dr. Craig Swanson for serving as my MMS mentor; and all the senior officers, colleagues, and friends who contributed to this project. Most importantly, I want to thank my wife, Sarah, and three children for being incredibly patient and understanding during this academic year.

> *The best generals are those who have served in the artillery. Good infantry is without doubt the sinews of an army; but if it has to fight a long time against very superior artillery, it will become demoralized and will be destroyed. Too much praise cannot be bestowed on those who managed my artillery.*
>
> - Napoleon Bonaparte

Introduction

As a supporting arm, Marine artillery has one role: to provide indirect fires in support of maneuver. Providing close and continuous fires relies on a network of capable individuals who fully understand their specific role within the artillery system. Fire supporters must be able to best advise a supported commander on the employment of fires and plan those fires in support of the maneuver plan. Those responsible for providing fires, emplacement, employment, and sustainment of the firing unit bring a host of problems that inexperienced officers find challenging to overcome.

The artillery system is inherently complex. Evolving technologies and improvements to weapon systems further add to its complexities. For officers to effectively lead in an artillery unit, they must be incredibly familiar with all aspects required to enable the fires chain. Officers who do not receive regular exposure to the changes in tactics, techniques, and procedures (TTP) of a firing unit may find difficulties in coming up to speed and identifying methods to improve. Officers thrown into fire support billets face similar issues. Overall, the artillery community does not provide enough time for its officers to build the proficiencies needed to perform all duties required successfully.

The Marine artillery community must readdress how it trains, prioritizes, and employs its company-grade officers to produce proficient individuals capable of driving innovation toward future fires**.** Dividing Marine artillery officers into two career tracks – fires planner and fires

provider – will produce experts who can better advise a supported commander on the use of fires or best employ the assets that will provide those fires.

Building the Marine Artillery Officer

The investment in building Marine Artillery Officers is not a small one. Marine artillery officers have the longest training pipeline when compared to other ground combat elements. Even after completing the six-month-long Program of Instruction (POI) at The Basic School (TBS), officers assigned the MOS of 0801 must still transition to Fort Sill, Oklahoma, to complete an additional five months of training at the Marine Artillery Officer Basic Course (MABOC). Over the course of 89 training days, students receive a mix of instruction that exposes them to a series of lessons needed to satisfy the MOS manual's requirements and prepare them for follow-on assignments in the Fleet Marine Force.

Artillery officers receive a large volume of instruction when they attend MAOBC, the MOS-producing schoolhouse. MAOBC is a stand-alone course that equates to the Army's Basic Officer Leadership Course B (BOLC-B) for Army lieutenants.[1] The course serves as the first of two steps in the 0802-artillery training pipeline for new lieutenants; the second step is completing the Joint Fires Observer (JFO) Course. A Marine artillery lieutenant is considered qualified for entry into Marine artillery upon completion of both courses. In 684 hours of instruction, students receive lessons in fire support, manual and automated gunnery, survey, Marine logistics, basic High Mobility Artillery Rocket System (HIMARS) operations, the M777A2 Artillery System, and target mensuration. Even with all the instruction provided, the POI produces a *basically trained* Marine officer who possesses the knowledge that the Operating Forces have determined critical for incoming lieutenants, as outlined by the Artillery training and

readiness (T&R) manual.[2] Because an artillery officer can serve a wide array of billets, the amount of information required to learn is difficult to scale without assuming risk in one area vice another.

Fire support and gunnery are the two primary foci of MAOBC. Of the 684 academic hours, fire support instruction accounts for 194, and gunnery 182. The course divides the remaining hours among practical exercises, examinations, values-based training, and battery operations.[3] Because the immediate needs of a firing battalion are not known to the schoolhouse, every officer must be equipped with the knowledge to serve as either a fire supporter or battery officer once they report for duty. Though each discipline's knowledge and theories are complementary, there is a yawning chasm between applying the two skill sets. Gunnery relies on a series of technical procedures to provide timely and accurate support to maneuver, while fire support planning requires a more artful approach to incorporate fires into the maneuver plan. Even with these understood and accepted differences, gaining commanders expect their new officers to have had equal exposure to each discipline under the current MOS road map.

The JFO is the final course that a Marine artillery officer must complete before moving graduation. The JFO course provides select joint personnel with standardized and joint certified training to engage targets with joint fires through the detailed integration with terminal attack controllers (TACs) and Fire Support Teams (FSTs). Throughout the 80-hour POI, students learn how to request, control, and adjust joint mortar, field artillery (FA), and naval surface fire support (NSFS) systems; provide targeting information for Type II or III close air support (CAS), Terminal Guidance Operations (TGO), Initial Terminal Guidance (ITG) operations, SOF Gunship Call for Fire, close combat attack (CCA) and joint fire support planning at the company

level.[4] This culminating fire support instruction ties together all the students' knowledge, enabling them to support the combined arms fight better.

New artillery officers receive extensive and valuable instruction, but the initial education is wide and shallow. MAOBC and the JFO course are not designed to produce experts but instead provide the basic understanding of concepts and ideas that effectively enable young officers to perform their initial duties in an artillery battalion. There is still a great deal to learn, on both sides of the artillery coin, for an artilleryman to be considered proficient. Like with all skills, proficiency is gained through experience, repetition, and feedback. For the average artillery officer, however, the ability to improve proficiency will significantly depend on timing and a little bit of luck.

Figure 1. High Mobility Artillery Rocket System (HIMARS)[5]

Figure 2. M777A2 Lightweight Howitzer[6]

Artillery as a System

To fully appreciate all that goes into planning for and providing fires, one must first understand all functions required to tie each artillery system's distinct element together. This section explains each element of the artillery system: The firing battery, the fire direction center (FDC), and the fire support team (FiST). It is not to oversimplify each element but rather to show the extensive requirements needed to maintain its respective functioning.

Since the Expeditionary Fire Support System (EFSS) divestment, the Marine Corps currently relies on two fire support platforms: the M777A2 howitzers (see fig. 1) and the High Mobility Artillery Rocket System (HIMARS) (see fig. 2). Though this section will refer more to cannon operations than rocket operations, the overall concepts remain valid. Weapon-system agnostic, a firing unit still must perform a litany of functions to remain firing capable, and its officers must display competency in multiple areas to supervise that it does so.

The Firing Battery

Artillery officers are ingrained with the mission of the firing battery from day one of their training: "to destroy, neutralize, or suppress by cannon, rocket, or missile fire, and to help integrate fire support assets into combined operations."[7] Understanding the battery's mission reinforces the fact that artillery is a supporting arm. To be effective, leaders in a firing battery must consistently train their unit to ensure it is prepared to perform its primary duty: support the maneuver plan.

The executive officer is the senior lieutenant in the battery. First and foremost, the XO must "be fully capable of assuming control of the battery."[8] To do so, the XO must understand all aspects of artillery operations related to the firing unit's employment. In garrison, the XO is responsible for managing the training and maintenance of the battery. During the conduct of

artillery operations, XOs serve as the Position Commander, performing various duties that are required before, during, and after live-fire operations such as:

- Supervise and coordinate logistical and maintenance efforts, including the distribution of all classes of supply.
- Act as liaison between the battery and logistical support agencies.
- Verify the lay of the battery.
- Ensure the accurate computation of XO's minimum quadrant.
- Establish and supervise the plan for battery defense.
- Direct howitzer operations and consult with the FDO on ammunition management.
- Lead the main body to the next firing position.[9]

Not all-inclusive, this sampling of duties shows just how involved an artillery officer must be within a unit. To become proficient in these functions requires repetition and training in areas that are not always related.

For this paper's purpose, the discussion of the platoon commander's duties (formerly known as the Assistant Executive Officer, or AXO) will be limited. In addition to supervising the firing line, the platoon commander assists the battery commander during the reconnaissance, selection, and occupation of the firing position (RSOP). AXOs must also be prepared to perform the duties of the XO and the FDO during sustained operations.

Officers in a firing battery must be able to perform various duties that are distinct and very distinguishable. Like any other unit, each officer billet exists to provide leadership responsible for supervising their respective unit's performance. Unlike other units, artillery batteries require the synchronization of specialized parts to be effective. Because officers must be interchangeable, they must learn and retain a great deal of information outside of their immediate billet description.

The Fire Direction Center (FDC)

The FDC is the "brains" of the artillery system. It is responsible for determining the firing solution needed to provide fires in support of maneuver. The fire direction officer (FDO) is responsible for all FDC operations, especially all FDC personnel training.[10] This single defined task carries with it a lot of implied tasks. The knowledge required to supervise just the technical operations of the FDC can be intimidating. After all, the end-result of fire direction is firing munitions in support of maneuver forces. An error in judgment, procedures, or computations can result in an incident that bears adverse effects.

The FDO is responsible for ensuring the firing unit meets four of the five requirements for accurate predicted fire:

- Accurate target location and size
- Accurate firing unit location
- Accurate weapon and ammunition information
- Accurate meteorological information
- Accurate computation procedures

The first requirement is the responsibility of the observer. The remaining requirements fall to the firing unit.[11] Though they apply specifically to cannon operations, the need to supervise *accurate computational procedures* is paramount across all weapon systems. There are no "mulligans" in indirect fire support. For an officer to effectively supervise this requirement, they must be proficient in all technical aspects needed to compute firing data. The Marine artillery community mandates that every officer demonstrate these requirements' proficiency by completing an annual safety test.[12] As weapon systems change, the need to demonstrate mastery for safety purposes will likely remain a requirement for those who are responsible for determining a firing solution.

As technology evolves to better support the warfighter, so too will its application in fires. The artillery community has already seen significant improvements in computer systems use to determine technical data for fires. A world away from large computers that perform simple calculations, Marines in the FDC perform fire direction on laptops equipped with the Advanced Field Artillery Tactical Data System (AFATDS) that can easily account for wind effects and the rotation of the earth. This system also enables the FDC to receive target information in digital form, shortening the time required to provide effective fires.

The requirements of a modern FDC to perform all functions are rather extensive. Though there are technical experts within the section, the FDO must have a solid understanding of the systems and procedures to employ the unit best. With all the nuances that accompany technology, the FDO must heavily invest in learning each system and remain abreast of any changes that will impact fire direction operations.

The Fire Support Team

The fire support team (FiST) serves as the "eyes" of the system. At the most basic level, observers within the FiST identify suitable targets for engagement with fire support assets. More complexly, at the company- and battalion-levels, fire support officers (FSO) plan and coordinate supporting fires at their respective levels. Most importantly, FSOs "assist the commander in overall fire support planning and coordination matter."[13] As the liaison between the firing unit and the maneuver unit, FSOs must understand how to employ fires best to support the scheme of maneuver.

Like the FDO, there is a wide range of implied tasks that accompany the billet description of an FSO. FSOs must perform more than the simple call for fire. They are responsible for the integration of artillery fires into the overarching maneuver plan. To be effective, FSOs must have

a detailed understanding of artillery as a system so that they can speak intelligently on requirements to employ a given surface-based asset best. As the liaison between the firing unit and the supported commander, the FSO must coordinate artillery unit requirements and remain abreast of the supporting unit's current operations and logistic requirements.[14] Though not as prevalent today, the FSO may be required to perform the Fire Support Coordinator (FSC) duties, requiring the officer to become proficient in yet another specialized skillset.

Jacks of All Trades

The artillery system is complex. Within each of the parts, there are enlisted Marines with specialized skill sets responsible for small unit actions. Cannoneers, Fire Direction Specialists, Scout Observers all bear the 08XX designator but are only required to maintain proficiency within their specific job function. On the other hand, officers within the system must skillfully tie together the technical science with the tactical art to effectively provide fires in support of the maneuver plan. When viewed separately, one can see that many areas require specialized skills to accomplish a parts-specific function. In a battery, the XO and platoon commanders are responsible for the emplacement, security, and sustainment of the firing unit, while the FDO is responsible for performing tactical fire direction while supervising all aspects of technical fire direction. To best advise a supported commander, the FSO must be proficient in all aspects of fire support planning and fires employment. Under the manning model, artillery officers are interchangeable between any of these roles. Though an officer can learn enough to support any of these functions to standard for a short duration, building experts who can drive innovation requires dedicated time and training to sustain long-term growth.

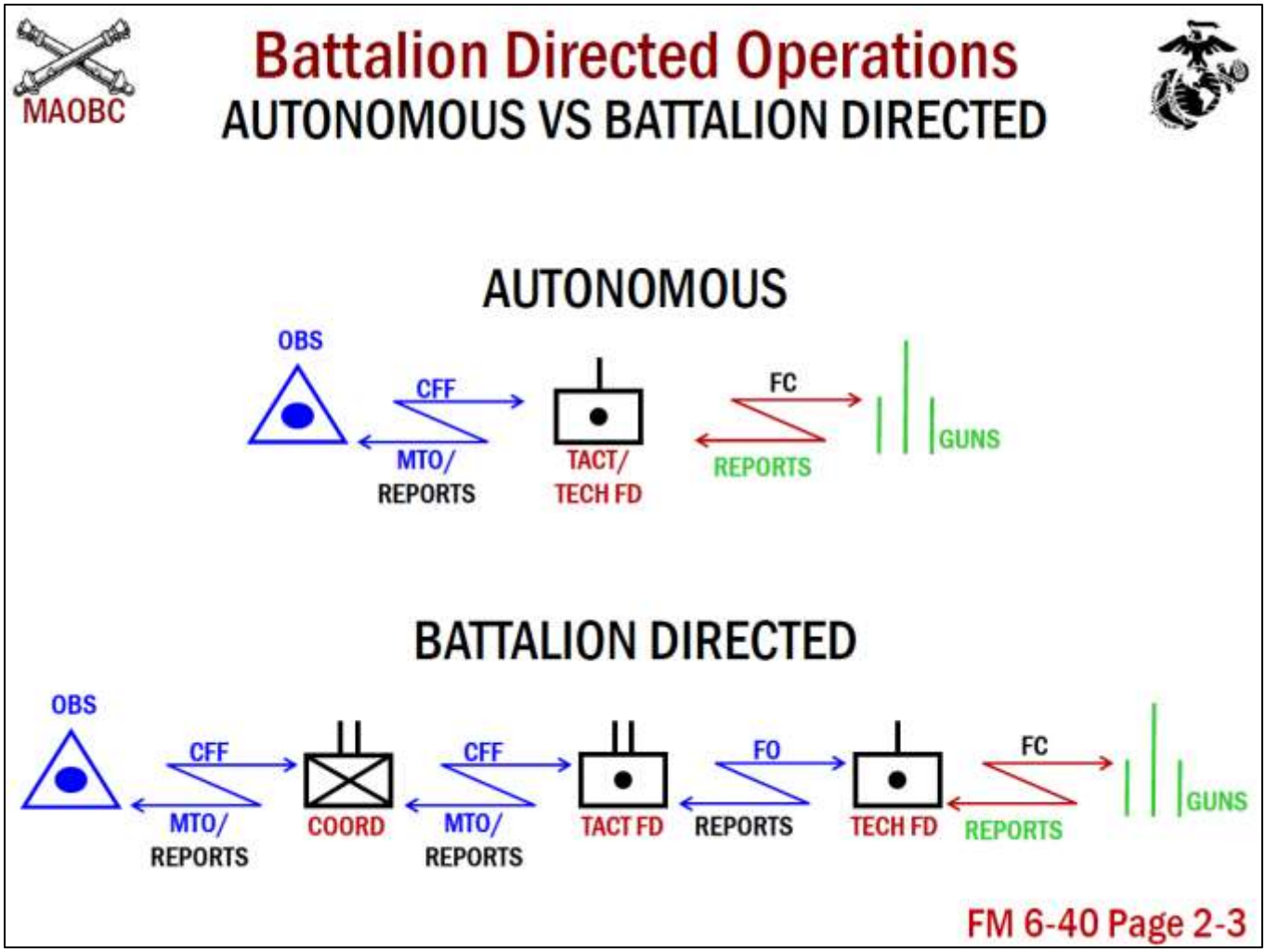

Figure 3. Three main elements of the artillery system: The observer team, the FDC, and the firing line. Artillery officers must be familiar with each element to perform their duties in their initial assignment.

The First Assignment

The average artillery lieutenant spends his or her first three-year tour in a firing battalion. Even before they report for duty, the Battalion Executive Officer (XO) has already assigned that officer to a position within the unit. Whether it is to fill a gap created by a mover or support an upcoming deployment, the XO carefully manages the Battalion Commander's officer slate to ensure that he fills every billet when possible. Often, due to unforeseen manpower considerations, officers may be redirected to fill a position for which the commander deems the assumption of risk unacceptable.[15] Because of the versatile nature of an 0802, the career track of an officer may take him or her outside of the typical path.

Today, XOs strive to manage the slate such that new officers are afforded time within the firing battery first. Many officers believe that to speak intelligently on the implementation of fires, fire support officers must understand the firing unit's inner workings.[16] Officers who have served in a firing unit are likely to appreciate better all of the requirements needed to provide fires. The movement, emplacement, sustainment, and survivability of a battery is not an easy endeavor. Those who have experienced battery operations complexity are better informed to advise a maneuver commander in fires' employment. Whereas before, a new officer's typical progression followed the billet path of FO, FDO, AXO, LNO, and XO, many believed that a fire support officer with battery experience could better explain these considerations during planning.[17] With this rationale, XOs now attempt to provide most new lieutenants with a rapid rotation within a firing battery.

Not all officers have the opportunity to serve their first tour in a battery. Due to the same manpower considerations referenced earlier, an immediate need to fill a fire support officer billet is sometimes unavoidable. In these instances, the XO and Commander must choose between

drawing from the pool of available battery officers or assigning a new join to the billet. The former has implications beyond experience. Drawing from that pool could negatively disrupt the unit's lifecycle or inhibit any organizational change already taking place.

On the other hand, placing a new officer in the FSO billet bears consequences outside of the community. Regardless of rank or experience, that new lieutenant serves as the face of the supporting unit. His or her actions will be considered a direct reflection of the unit from which they represent. A critical role of the XO is to identify the right person for the right job, keeping in mind the unit's best interest and the Marine.

The first assignment is arguably the most important one. It sets the tone for an officer's first three-year tour. It could cause, or become a casualty of, a domino effect of timing, manpower shortfalls, deployment requirements, and personality. Predicting the state of a unit beyond six months is already tricky enough for an XO; allowing every officer to serve in every billet is even more so. The expectation that an officer can be both a fire supporter and fires provider further complicates the matter. Leaders continuously work to find the balance between competent representatives who can plan for fires and capable individuals to supervise the conduct of providing those fires. Under the current, one-MOS, two-path construct, doing so will be an enduring problem.

The Case for Change

Fire Supporters

The call to reform the fires community is not a new one. Over 20 years ago, young artillery officers identified the need to address a change observed in the relationship between the artillery community and a supported maneuver unit. Roles in an infantry battalion that an

artillery officer would usually fill transferred to their infantry peers. Infantry lieutenants with no specialized training served as fire support team leaders, while the role of the fire support coordinator (FSC) transitioned to the Weapons Company Commander.[18] A seemingly minor change in how a supported unit employs its supporting officers is attributed to, in part, the proficiency of the officer provided.

Research for this paper identified that many of the written works on this subject specifically address the fire support role of Marine artillery. Most works referenced argue for changes in how the Marine artillery community employs its fire support personnel. From calls to re-establishing habitual relationships with maneuver battalions[19] to suggestions on how the fire support structure should reorganize to best support the infantry,[20] Marine Artillery Officers have identified the need for some sort of reformation since the early 2000s. Many of the articles, research papers, and theses reviewed for this paper shared similar ideas.

Every author acknowledges that the mission of the artillery is to support the efforts of maneuver. There were no indications that any proponent of change saw a need to change the supporting role of Marine artillery. Additionally, many authors argue that the artillery community must make changes to re-establish credibility within the infantry community. In many maneuver battalions, the officer responsible for controlling supporting arms is not an artilleryman but an infantry officer.[21] One notable theme in many of the reviewed works was that the fire support officer's proficiency is lacking.

As mentioned earlier, Artillery officers train to serve as both battery and fire support officers. Until recently, the program of instruction (POI) for the Marine Artillery Basic Officer Course (MAOBC) heavily focused on cannon gunnery. The responsibility of increasing fire support proficiency fell onto the Battalion, which meant the training might not be the same

across artillery units. This delta has led one author to recommend formal FSO training for officers.[22] This practice also led one author to state the "the Corps does not care about fire support at the maneuver battalion level."[23] To correct the misperception, the artillery community must prioritize the manning of fire support billets, ensuring that each billeted officer had the appropriate rank and proficiency to advise the maneuver commander on the employment of fires. Under the current artillery model, there is little time to develop proficient lieutenants to serve as company fire support officers.

Fires Providers

A lack of works calling for change on the fires provider side of the artillery coin does not indicate a desire to maintain the current course. This author inferred the arguments that are not explicit in published articles from after-action report trends – or the lack thereof.

The constant rotation of young officers through billets inhibits their ability to record or expound upon lessons learned effectively. At the organizational level, the Marine Corps strives to capture valuable lessons through a formal submission process managed by the Marine Corps Center for Lessons Learned (MCCLL). The Marine Corps Lessons Learned Program (MCLLP) serves as a dynamic program in which units within the operating forces can submit their observations, recommendations, and other relevant material. Other units can easily access the repository of reports to aid in exercise design, shape training objectives, or improve upon an idea identified by another unit. For units that are deploying, the MCCLP provides lessons from operational experiences. Advocates and others who may want to improve how Marines forces are organized, trained, and equipped can also use the information. Furthermore, advocates can use captured information to prepare recommendations to combatant commanders on any needs to make institutional changes to doctrine, organization, training, materiel, leadership and education,

personnel, and facilities (DOTMLPF).[24] At the artillery regiment and below, there seems to be little coordination to synch efforts across units.

In a sampling of artillery-specific AARs from the past three years, many of the trends identified were not in the employment of artillery but rather the conduct of a particular event or exercise.[25] Lessons learned on the conduct of Integrated Training Exercise (ITX), for example, heavily focus on the administrivia associated with the artillery unit's involvement. Travel to and from the exercise location, the use of exercise equipment, and the communication with the remain behind element (RBE) are a few topics that trend throughout AARs. While no information captured is invaluable, leaders must direct the focus of AAR topics to address issues more remarkable than the use of non-tactical vehicles for travel in and out of the training area., Units must make every attempt to identify lessons that will benefit most of the artillery community while keeping the information classification at the appropriate level.

To best contribute to the community of practice, commanders should provide subordinate leaders with clear guidance on which topics to address. With directed topics, units can focus training efforts on validating ideas or recommending changes that others should make in subsequent training events. However, this method is only efficient if other units read published AARs as a regular occurrence. Units who participate in the unit deployment program (UDP) seem to have tremendous success with this. In one example, a battery commander worked to improve the battery's visual and electromagnetic signature, clearly stating his intent and findings. In a subsequent AAR, another commander noted that his unit implemented the previous recommendation, proved it to be successful, and provided another recommendation for others to take forward. If this process were to continue the same path, there would eventually be a series of units that did not have to "reinvent the wheel" but instead improve upon proven tactics gained

through shared learning. Command-directed AAR topics can serve as a valuable supplement to continuity issues caused by junior officer rotation.

The Future of Fires

Marine Corps artillery is approaching a watershed moment. The Commandant of the Marine Corps (CMC), recognizing that the emergent threats intend to target forward bases, ports, runways, and naval assets, has directed the Marine Corps to become proficient in Expeditionary Advance Base Operations (EABO).[26] Marine artillery must look to improve its long-range precision fire (LRPF) capability to support these types of operations because, in the vast expanse of the Pacific, current ground-based fires are deficient in range and capability.[27] Changes are already in progress to correct the deficiency; however, as the Marine Corps fields new systems that address the capability shortfalls, operational artillery units will have to identify changes in TTPs to employ those systems.[28] For the organization to learn and innovate, officers at the lowest echelons must be heavily involved in the feedback loop.

As the transition begins, those in the firing unit will face sudden changes. Once a unit receives its equipment set, Headquarters Marine Corps will direct the unit to bench its current assets and immediately transition away from cannons. Transition is a challenging endeavor. The firing unit will receive support representatives who can answer questions about the new system and collect data and feedback as units conduct training to ease the process. Observers will compile the information and provide it to the formal learning center (i.e., schoolhouse) to help tailor training for future classes.[29] The Marines involved with the new systems' initial fielding will set the baseline for new TTPs and methods to employ future fires.

Fire supporters will also experience an abrupt change. When artillerymen speak of "fires in support of maneuver," it is understood that *maneuver* refers to ground forces. As the Marine

Artillery conducts its transition, the supported unit may refer to something entirely different. Naval vessels, expeditionary bases, and other weapon systems may become assets that fires are employed to protect.[30] With that change in mind, fire supporters must adjust their current skill set to support a potentially more complex mission.

A young artillery officer's current career path will not benefit the community as changes begin to take place. As TTPs start to change to match future systems' employment, artillery officers with expertise in a particular area must educate supported commanders. Leaders within the community develop methods to cultivate expertise across the spectrum, from fires providers to fire supporters.

Recommendations

The upcoming changes within the artillery community provide an excellent opportunity for leaders to make changes that can strengthen the artillery officer's subject-area expertise, identify and retain talent, and encourage innovation. The following is a list of recommendations on how to achieve those objectives:

More Time in Assigned Billets

The first recommendation is to simply assign officers to serve in billets for a longer duration. Newly minted 0802s will still arrive ready to perform whatever job to which they are assigned. If an officer knows that they will be spending a prescribed amount of time in a particular role, they can better plan for and create short-range goals.[31] With more time on station, leaders have more time to apply lessons learned, consolidate improvements, and maintain forward momentum.[32] At the end of the prescribed tour, the officer will have a detailed capturing

of ideas to improve the overall vision; the proficiency gained will allow them to carry the knowledge learned through to other future billets.

Leaders must first remove barriers to enable change to occur. First, they must discard the notion that young officers must experience time in every billet meant for a junior officer. One billet on each side of the artillery system coin will suffice. In the battery, officers can still learn passively. Through proximity and the need to work together, officers are likely to interact frequently enough that learning will occur through conversation. To conduct training effectively, a fire support team must maintain constant interaction with the supporting firing unit. Through constant communication, junior officers can build upon their baseline knowledge learned at the schoolhouse while focusing on their specific role while innovating.

This recommendation requires no change to manpower or structure. The artillery table of organization and equipment (TO&E) already accounts for the requisite number of artillery officers to support this change.[33] What must change is the organizational culture that accepts the frequent shuffle of officers as commonplace and necessity. Though there are external requirements that may immediately affect a unit's ability to maintain consistency in officer assignment, commanders must make concerted efforts to afford officers more time in specified billets.

Applying this change now helps sets conditions for the pending transition. Officers equipped with more time and a clear vision from senior leaders can begin to identify ways to employ new systems with existing equipment. Successful innovation requires more than validating current doctrine and TTPs.[34] Leaders must be able to study existing lessons and carry forward any applicable ones. Officers who become proficient in current systems and doctrine can help future junior officers bridge the gap between old and new.

Fire Supporters and Fires Providers

The final recommendation is the bifurcation of the 0802 MOS into two distinct tracks. By dividing artillery officers into fires providers and fire supporters, a preponderance of focus can shift towards honing one's craft in their specific track. Though this recommendation requires changes to the MOS manual, there are minimal requirements to train the current training pipeline or structure required to support the MOS divide.

Removing the requirement to master fire direction will free up a fire supporter to dedicate a more significant amount of time in building expertise in fire support planning. The same is true for fires providers. Without the requirement to stay current in fires planning, officers can focus more on identifying and rehearsing TTPs that enable a firing unit to maintain equipment readiness while improving survivability.

There will be no requirement to adjust the 0802 structure at the junior officer level. Billets already exist for officers to fill. As mentioned before, however, artillery officers are interchangeable between those billets. If leaders were to accept this recommendation, then billets would be filled by officers with the new designator. Young officers will still arrive at their first unit prepared to fill any role.

The POI at the formal learning center will require minimal change. There is still benefit in understanding how artillery as a system functions. Like how all officers learn the basics of being a provisional rifle platoon commander, young artillery officers will still learn the basics of the overall artillery function. Once officers reach the Fleet Marine Force, they can begin focusing on their assigned role.

Artillerymen must accept a change in organizational culture under this recommendation. Today, officers must fill a slew of specific "key billets" if they hope to remain competitive for

Battalion-level command.[35] For a company-grade officer, the critical assignment is battery command. Opponents of this recommendation argue that a two-track system removes a portion of artillery officers' population from eligibility to command a firing battery. While this is true, commensurate opportunities are still available. Adjusting the task organization of the fire support element is one method to provide additional command opportunities. Although artillery regiments are experimenting with methods to reorganize the fire support elements, there is still no consensus on how the community will move forward.[36]

Being a part of the fire supporter MOS does not preclude an officer from all command opportunities within a firing battalion. Officers from either MOS track can still serve as Headquarters Battery Commander. Even under the two-track plan, headquarters battery's role remains the same; the battery is responsible for supporting all artillery system elements at its respective echelon. Officers from either track will still have experienced controlling formations, planning movements, and managing the maintenance of a complex equipment set, making them fully qualified to command the unit.

Officers who become fires providers will not be removed entirely from the fires planning process. Just as it is today, the integration between fires and maneuver will require close and detailed planning between the two elements. Leaders in the firing unit must still translate the Essential Fire Support Tasks (EFST) produced by the fire supporter into Essential Field Artillery Tasks (EFAT). The consistent interaction between the two functions creates opportunities to refresh and improve upon the baseline education received in an officer's initial MOS training.

The restructuring of officer specialties will show supported units that the artillery community is committed to providing maneuver commanders with proficient officers who have received tailored training to best support their plan. Without the requirement to maintain detailed

proficiency on both sides of the track, each officer MOS can focus on their specified role. Supported commanders will no longer have to question their supporting officer's training background while ensuring that the unit providing supporting fires has had continuity in training to remain firing capable.

Officers on either side will also find themselves better positioned to focus on the community of practice topics, capture new lessons, and validate others. With time to dedicate to their craft, fires providers and fire supporters can home in on specific topics of interest and develop training plans to incorporate ideas into lower-level exercises. The resulting reports can continue to feed a cycle of shared learning that will supplement time gained in not preparing for a quick transition to the next available billet.

Conclusion

Marine artillery has evolved gracefully, supporting every mission asked of it. From massing fires in conventional wars to providing precision fires in COIN operations, artillerymen have answered all calls for fire and provided the desired effects. As the Marine Corps transitions to face a different kind of threat, the artillery community must follow and support. Though change is not easy, neither is manual gunnery.

The transformation that is taking place within the artillery community will not be without its problems. Until new weapon systems reach all intended units for integration into the operating forces, units must continue to train with their current ones. Officers can drive innovation by encouraging their Marines to identify ways to employ future systems while using their current equipment. To do so, they need time.

While the Marine Corps' highest-level initiates call for revolutionary innovation, the officers must drive evolutionary innovation at the tactical level. Evolutionary innovation requires

time for tactics, gear sets, and conceptions to change on an incremental basis.[37] With the pending transition from a dominantly-cannon force to a rocket- and missile-centric one, ushering in the change will challenge those currently serving in firing units. Because officers cycle through billets so frequently, there is little time to identify and act upon areas to improve. This constant shuffle often results in AARs with recurring themes over multiple iterations of similar events.

The transition from one weapon system to the next will also trigger a change in organizational focus. This change can also serve as an opportunity to readdress how the artillery community trains and employs its officers. Successful innovation within the artillery community will depend on applying the organization's focus over a sustained period and not just rely on a single entity's ability to guide the path of innovation for a short duration slightly.[38] With a relatively short time in various billets, junior officers find difficulties affecting incremental change, let alone identify long-term solutions. Commanders must identify the right officers for the right positions and leave them in place long enough to encourage innovative thought and experiment with implementation.

Junior officers will play a crucial role in the future of the artillery community. During the interwar period, a critical factor in successful innovation was the officer corps' culture and their involvement with how a force prepared for combat.[39] During the transition from cannons to newer systems, the young officers are responsible for guiding the organizational culture's change that will accompany it. Throughout the process, however, senior leaders must also be involved. Their role should be to identify any barriers to change and remove them as necessary.

Innovation will be important in the coming years for Marine artillery. Transitioning from legacy TTPs and weapon systems will require officers to be proficient in many more areas than expected. Continuing to train with legacy systems will still be a necessity to maintain a wartime

capability. Until the transition is complete, many artillerymen will find themselves caught between two worlds, especially if directed to execute orders between different units. It is not often that military organizations get the chance to "innovate with a clear slate."[40] While one can argue that the artillery community is not getting a clean slate, in this case, it still has plenty of room to record new methods and ideas.

Understanding all that goes into building a Marine Artillery Officer, how the current artillery system is structured, and the prescribed billet rotation is important because it provides the baseline from which to deviate. The organizational culture of today did not appear out of the ether. A series of changes and events took place to guide the community to its current state. As the Marine artillery begins its transformation to prepare for future wars, leaders must take this opportunity to implement the necessary changes looming over the horizon.

Even with a transition from one weapon system to the next, leaders should not expect an artillery officer's knowledge base to change. Officers must still be proficient in the weapon system's employment and position and secure the firing unit. XOs will still have a large amount of equipment to maintain and a robust training package to manage. Though the FDO will not have to compute ballistic solutions, they must also have the ability to maintain communication with the supported unit to provide the requested fires. Fire supporters will have to continue to plan fires that, instead of spanning kilometers, span nautical miles. Artillery officers do not have to start with a new slate and build proficient officers capable of modifying the current one.

The need to change how artillery officers are employed will still be a concern under the future construct. Officers must be proficient in a particular track – fire support or fires provider – to best plan for fires or employ the weapon system. If the artillery community does not address

these changes, it will continue to produce jacks of all trades who will find difficulty driving innovation.

[1] In 2016, the Marine POI broke away from the Army POI to address shortfalls in instruction. The Marine Corps T&R events specific to 0802-FS-1XXX were not adequately being taught because the Army's requirements were the main driver for instruction.
[2] Marine Detachment, Fort Sill, "Marine Artillery Officer Basic Course Program of Instruction," 2020.
[3] Marine Detachment, Fort Sill, "Marine Artillery Officer Basic Course Program of Instruction," II–1.
[4] Marine Detachment, Fort Sill, "Joint Fires Observer Course Program of Instruction," 2019.
[5] https://www.lockheedmartin.com/en-us/products/high-mobility-artillery-rocket-system.html
[6] https://asc.army.mil/web/portfolio-item/peo-ammo-lw155/
[7] Headquarters United States Marine Corps, *MCRP 3-10E.4 Tactics, Techniques, and Procedures for the Field Artillery Manual Cannon Gunnery* (Washington, DC, 2016), 1–1.
[8] Headquarters United States Marine Corps, *MCRP 3-10E Artillery Operations* (Washington, DC, 2018), 6–1.
[9] Headquarters United States Marine Corps, *MCRP 3-10E Artillery Operations*, 6–2.
[10] Headquarters United States Marine Corps, *MCRP 3-10E.4 Tactics, Techniques, and Procedures for the Field Artillery Manual Cannon Gunnery*, 2–2.
[11] Headquarters United States Marine Corps, *MCRP 3-10E.4 Tactics, Techniques, and Procedures for the Field Artillery Manual Cannon Gunnery*, 1–3, 1–4.
[12] Marine Detachment, Fort Sill, "JRegtO P3570.1_: Marine Corps Artillery Safety Standing Operating Procedures," n.d., I 2-3.
[13] Headquarters United States Marine Corps, *MCRP 3-10F.2 Supporting Arms Observer, Spotter, and Controller* (Washington, DC: Headquarters United States Marine Corps, 2016), 1–2.
[14] Headquarters United States Marine Corps, *MCTP 3-10F Fire Support Coordination in the Ground Combat Element* (Washington, DC: Headquarters United States Marine Corps, 2018), 1–8.
[15] Commanders cannot account for emergency situations, officer misconduct issues, and overall needs of the Marine Corps
[16] Major Albert D. Bellamy, Conversation with Maj A. D. Bellamy, Executive Officer, 1st Battalion, 10th Marine Regiment, n.d.
[17] Christopher Castelli, "Marine Artillery Support: A Model for Manning Fire Support Billets in Maneuver Units," *Marine Corps Gazette* 83, no. 7 (1999): 37-.
[18] LtCol Eric G. Hansen, "The Time for Fire Support Professionals Is NOW!," *Marine Corps Gazette*, June 2003, 21.
[19] Christopher Tyson, "The Glass Ceiling: The Role of Fire Support Officers in Maneuver Units" (Marine Corps University, 2017).
[20] Leslie Payton, "A Revolution in Company Fire Support," *Marine Corps Gazette* 87, no. 6 (2003): 24-.
[21] Christopher Castelli, "Marine Artillery Support: A Model for Manning Fire Support Billets in Maneuver Units."
[22] Christopher Tyson, "The Glass Ceiling: The Role of Fire Support Officers in Maneuver Units."
[23] Christopher Castelli, "Marine Artillery Support: A Model for Manning Fire Support Billets in Maneuver Units," 37.
[24] Headquarter United States Marine Corps, "MARADMIN 133/08 MARINE CORPS LESSONS LEARNED PROGRAM (MCLLP) AND THE MARINE CORPS CENTER FOR LESSONS LEARNED (MCCLL)," February 21, 2008, https://www.marines.mil/News/Messages/Messages-Display/Article/893717/marine-corps-lessons-learned-program-mcllp-and-the-marine-corps-center-for-less/.
[25]Headquarters United States Marine Corps, Marine Corps Center for Lessons Learned, 2020.
[26] Gen David H. Berger, "39th Commandant's Planning Guidance" (Washington, DC, 2019), 11.
[27] Berger, "39th Commandant's Planning Guidance," 13.
[28] LtCol Aaron M. Doty, Conversation with LtCol A. M. Doty, Artillery and ANGLICO Advocate, PP&O, Phone, January 19, 2021.
[29] LtCol Aaron M. Doty, Conversation with LtCol A. M. Doty, Artillery and ANGLICO Advocate, PP&O.
[30] LtCol Aaron M. Doty, Conversation with LtCol A. M. Doty, Artillery and ANGLICO Advocate, PP&O.
[31] John Kotter, *8 Steps to Accelerate Change in Your Organization*, 2018, https://www.kotterinc.com/wp-content/uploads/2019/04/8-Steps-eBook-Kotter-2018.pdf.

[32] John Kotter, *8 Steps to Accelerate Change in Your Organization*.
[33] Headquarter United States Marine Corps, "Unit TO&E Report" (United States Marine Corps Total Force Structure Managment System, n.d.).
[34] Williamson Murray, "Innovation: Past and Future," in *Military Innovation in the Interwar Period* (New York: Cambridge University Press, 1996), 327.
[35] Col Robert J. Hallett, Conversation with Col R. J. Hallett, Commanding Officer 10th Marine Regiment, Phone, January 4, 2021.
[36] 11thMar has FS Batteries, 10thMar has put them back in batteries.
[37] Williamson Murray, "Innovation: Past and Future," 308.
[38] Williamson Murray, "Innovation: Past and Future," 309.
[39] Williamson Murray, "Innovation: Past and Future," 313.
[40] Williamson Murray, "Innovation: Past and Future," 313.

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