

Countering future threats by maintaining manual gunnery proficiency

By Capt. Michael Wish

It may seem obvious that Marines and Soldiers are already training for the next fight, but the real question is, are they training for the right fight? A great number of past predictions have failed to accurately determine who the next adversary would be or how they would be fought. In 1991, who could have predicted the events of 9/11 and the following decades-long war with Afghanistan? Two years later was anyone desperately trying to remake the military for an insurgency fight in Iraq? What fight should artillerymen be preparing for in 2027? While the field artillery cannot know exactly what the next conflict will entail, it can identify potential adversaries and threats, design training to produce a flexible force ready for several scenarios and creatively reimagine doctrine to remain prepared for any threat.

For many years following sustained counterinsurgency operations in Afghanistan and Iraq, many senior artillerymen have perpetuated a belief that the artillery community has “lost its relevancy” and is fighting to get it back. Units in the force and fleet were told to get back to the basics as if line units could no longer accomplish the mission of the firing battery. To some extent there is reason to believe that proficiency in the field artillery was lost, given the high rate of nonstandard missions artillery units were asked to conduct. Furthermore, artillery units who did provide kinetic Fires in support of maneuver units were usually static at relatively permanent fire bases and often only providing precision guided munitions in order to avoid collateral damage. However, the loss in proficiency, whether perceived or real, has resulted in a large-scale movement to realign the ar-

tillery community with pre-9/11 doctrine while at the same time increasing the community’s technological edge, especially in fire direction. Unfortunately, this course of action fails to consider future adversaries and threats.

Multiple recent articles across military journals have identified the greatest emerging threat as electronic warfare (EW). In fact, in the most recent Fires issue, an article cited the Journal of Asymmetric Warfare, which concluded that Russia far outmatches the U.S. in tactical EW.¹ Despite this widely accepted reality, serious efforts are underway to “modernize” the field artillery through the implementation of new technologies and by eliminating manual gunnery equipment and procedures. These efforts exacerbate the problem with a force that is already over-reliant on technology. Military experts in the civilian world are recognizing this growing problem as well. In the publication, *The National Interest*, Jacquelyn Schneider states that “the U.S. may be coming to a point in which the utilization of digital technologies that has made the U.S. so effective and so lethal has developed into a dangerous digital dependency.”²

This digital dependency is all too clear; in the last few years manual gunnery instruction was completely removed from the 13J Advanced Individual Training (AIT) program of instruction (POI).³ Furthermore, the non-commissioned officers attending the Advanced Leaders Course (ALC) receive only 12 training days on manual gunnery, focusing on muzzle velocity management and manual cannon safety computations, the latter of which is not applicable in combat scenarios. The Basic Of-

ficer Leaders Course (BOLC), Marine Artillery Officer Basic Course (MAOBC) and the Marine Artillery Operations Chief Course (MAOCC) are the last bastions for in-depth manual gunnery, and even BOLC’s manual gunnery instruction is under assault. New technologies should and are being implemented, along with the training to properly employ systems, but they should not create a critical vulnerability in the very fight they are supposed to assist with.

“The danger is that with digital dependency comes both extreme capability and extreme vulnerability so that, paradoxically, the U.S. may at the same time be both more militarily effective and less secure.”⁴

Proficiency in manual processes has already started to degrade, evidenced by reports from Joint Readiness Training Center and the National Training Center. The Center for Army Lessons Learned has identified multiple failures in this area. In fiscal year 2015, the Combat Training Center observed that “units rarely meet all five requirements.” From the NTC Impressions Report 2015, “Unit was challenged in completing the necessary data on the [Department of the Army Form 4504 Record of Fire].”

A recent JRTC trends slide deck specifically stated that units could not transition to manual means for determining data and if they were not fully digital capable and were unable (not degraded, but actually unable) to provide Fires. Improving firing data through registrations, using manual forms and determining data in a manual setting are skills that are continually degrading.

Large risks are being taken through increased digital dependence in the field artillery. The Army has already cut the survey

1 Journal of Asymmetric Warfare, ‘Tactical EW and Cyber: Russian versus U.S. Capability’, Vol. 1, Issue 2, August 2016.

2 Schneider, Jacquelyn, et al. “America’s Digital Dependency and the Capability/Vulnerability Paradox.” *The National Interest*, The Center for the National Interest, Sept. 6, 2016, nationalinterest.org/blog/the-buzz/americas-digital-dependency-the-capability-vulnerability-17601. Accessed Oct. 1, 2017.

3 13J AIT is the entry-level school for soldiers who will determine technical fire direction in the Fire Direction Center.

4 Schneider, Jacquelyn, et al. “America’s Digital Dependency and the Capability/Vulnerability Paradox.” *The National Interest*, The Center for the National Interest, Sept. 6, 2016, nationalinterest.org/blog/the-buzz/americas-digital-dependency-the-capability-vulnerability-17601. Accessed Oct. 1, 2017.

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—Sergeant Major of the Army, Sgt. Maj. Dan Daily

and meteorological (MET) military occupational specialties, meaning in a degraded environment without the GPS, Army FA will not be able to account for the second and fourth requirements for accurate predicted fire: accurate firing unit location and accurate meteorological information. When unable to account for the five requirements a unit could easily register, but along with the usual drawbacks of registering (enemy target acquisition, ammunition expenditure, etc.), units lack experience and technical knowledge in registrations because they don’t train for them. After all, if the digital systems are always functioning in a training environment and there is no EW threat, then a unit is always meeting the five requirements. This simply won’t be the case in the next large-scale conflict.

The second and third order effects of removing manual gunnery instruction are far reaching. The most obvious one will be an inability to troubleshoot digital systems, especially when the accuracy of Fires needs improving. An excellent example of such troubleshooting in action are the recent efforts of 1st Battalion, 7th Field Artillery Regiment’s leaders who refused to accept “good enough” as an appropriate

answer to achieving the goal of the FA. In their Fires Bulletin article, “Every mil matters; one battalions fight against error,” Lt. Col. Jim Collins and Capt Joshua Herzog expertly describe their practical application of manual gunnery knowledge as well as a “renewed culture of exacting standards,” as they isolated and resolved errors, a process which would not be possible without a deep knowledge of manual gunnery.⁵ Just as in mathematics when a student must learn how to add, subtract, multiply and divide before using a calculator, so too must the fire direction officers (FDO) and operations chiefs understand the theory by which our systems operate, not just “buttonology.”

Using manual gunnery as a tangible method for instructing theory and the application of artillery systems to tactical and technical fire direction has the benefit of also preparing Marines and Soldiers to fight in a digitally degraded environment, which is also exactly how they should train. While every artilleryman should be highly capable and efficient with current digital systems and their employment, every training evolution should include an EW attack to various systems. A simulated GPS failure

should require a response by the gunline to lay the howitzers by “glass and iron.” Communications failures will result in the fire direction centers inability to receive updated MET, forcing chiefs and FDOs to take active steps to improve firing data. The scenarios are as endless as they will be on the next battlefield, and the FA needs to be prepared for that eventuality.

Potential adversaries, threats and results from worse-case scenario training will affect artillery doctrine as it moves into the future. No longer can batteries maintain firing positions for more than a few volleys before receiving counter-battery fire from the enemy. This means future doctrine will not only include contingencies for degraded environments, but also accounting for continuous and emergency displacements, which provide for an incredibly complex and dynamic combat environment where degradations are compounded by constantly changing positions.

The future of FA will undoubtedly benefit from advances in friendly tactical EW, but it would be unwise to wager the entire capability of the artillery community on that eventuality, especially in the short term. The FA must continue to implement manual gunnery theory and procedures in its educational system, provide realistic training scenarios that leverage every artillerymen’s capabilities across the entire spectrum of fully automated and degraded artillery operations, and update its doctrine to deal with the very real EW threat that could actually mean a loss in relevancy for FA. Perhaps the FA needs to heed the warning of Sergeant Major of the Army, Sgt. Maj. Dan Daily. “If you’re asking if we’ve degraded our analog skills based upon technology and the increase of technology, of course we have. And I agree we can’t lose the ability to do those things analog-wise.”⁶

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5 Collins, Jim, and Joshua Herzog, “Every mil matters: One battalion’s fight against error.” Fires, 2016, pp. 56–60.

6 Tan, Michelle, “Back to basics: Army dials up traditional soldiering once again.” Army Times, Army Times, July 5, 2016, www.armytimes.com/news/your-army/2016/07/05/back-to-basics-army-dials-up-traditional-soldiering-once-again/. Accessed Oct. 3, 2017.