Combining past and modern training methods

By 1st Lt. Kristofer Thompson

The future character of warfare is rapidly increasing in complexity due to emerging trends in technology. Current world affairs affect how we look at preparing our Soldiers and the Army. Air defense artillery equipment continues to evolve with the times and has become more digitally-centric. The intricacies of training Air Defenders using digital and analog methods is imperative so they are able to rapidly emplace and operate their systems. As international relations become more complex, there is a rising precedence for a more dynamic training style, one that blends digital and analog training that prepares the U.S. for uncertain and likely contested operational environments.

Numerous professional military journals have concluded that a significant threat to the United States military lies within the electronic warfare (EW) realm. An article from the Journal of Asymmetric Warfare found that near-peer competitors far outmatch the United States in tactical EW.1 U.S. Army Gen. Raymond Thomas III, U.S. Special Operations Command commander, stated that Syria has become, “The most aggressive electronic warfare environment on the planet, with Russian and Syrian electronic warfare systems working to disable or spoof American Aircraft.”2

In response to this burgeoning threat, there are rapid and concentrated efforts to update the Air Defense Artillery Branch to contend with these pressing issues. However, the Army must be wary of becoming over-reliant on technology that could be degraded or destroyed in future congested and contended environments. These issues can be seen in Air Defense Artillery as Defense Advanced GPS Receivers (DAGRs) are used for nearly the entire emplacement of a Patriot fire unit. Soldiers use DAGRs to relay the exact position of launching stations, radar location and direction to the Engagement Control Station (ECS). Air defenders should train for contingencies during future operations ranging from reacting to EW attacks, operations after GPS degradation, and spoofing to prepare Soldiers for the uncertainty of the next battle.

A way the Army is incorporating modern technology in the Air Defense Artillery Branch is through the use of synthetic training environments. These simulations allow air defense Soldiers to practice and become more proficient during emplacements as well as air and ground battles. During virtual exercises, cross-functional teams can simulate weather and terrain that mimic real life areas and scenarios. One scenario commonly practiced in air defense is communications loss from the ECS to higher echelon units. During the scenario operators are required to talk via voice with communications equipment using ultra and very high frequencies. This equipment is not vulnerable to jamming, allowing the operator to validate and engage enemy aircraft and missiles even in the event of GPS loss. Due to the ECS’s internal operating system, it remains unaffected by GPS degradation. Operators can continue to make manual engagements primarily because the system is self-contained. This method of communication also requires minimal maintenance from the operator. These realistic training aids help increase lethality in with high technology to degraded technology capabilities, and allow Soldiers to practice their skills with the benefit of making and learning from mistakes without repercussion. However, a downside with the use of these synthetic trainers is the physical hands-on training Soldiers receive when practicing with their equipment.

Teaching Soldiers how to manually use and emplace equipment presents its own set of challenges. One challenge is retaining senior enlisted Soldiers that were taught these methods.

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digital systems in non-contested operational scenarios for the last 15 years. Air defenders have not been forced to operate in a full spectrum operation where the U.S. military hasn’t been the dominating force across all war fighting functions. Another problem that presents itself with manual emplacement is maintaining the necessary proficiency to use equipment such as aiming circles, tripods, and gunners quadrants. This equipment operates similar to a compass allowing a launcher operator to find their primary target line and azimuth in degrees. Once the operator properly orientates the equipment, the location is recorded in a military reference grid system format that is given to the ECS to be manually entered into the system. In the event that GPS communications is restored after manual emplacement, the ECS will receive the location data from the DAGRs located on the equipment and automatically update them in the system. The operator will be notified via an on-screen message. Though the process of manual emplacement is a lost art among the force today, it is still a requirement for battery gunnery tables that certify the crews and operators on their assigned equipment.

Even with the advancements of air defense artillery equipment, it is crucial for air defenders to maintain analog knowledge due to the uncertainty and unpredictability of future operational environments. Through continued advancements and implementation of realistic training, these Soldiers will increase mission lethality as an air and missile defense cross-functional team. Training such as this allows the United States military to remain fully mission capable for any scenario that is presented in the next first battle.

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