

AIR DEFENSE ARTILLERY

Journal



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Purpose

The Air Defense Artillery Journal serves as a forum for the discussions of all U.S. Army Air Defense Artillery professionals, Active, Reserves and National Guard; disseminates professional knowledge about progress, development and best use in campaigns; cultivates a common understanding of the power, limitations and application of fires, both lethal and nonlethal; fosters fires interdependency among the armed services, all of which contribute to the good of the Army, joint and combined forces and our nation. The Air Defense Artillery Journal is pleased to grant permission to reprint; please credit Air Defense Artillery Journal, the author(s) and photographers.

On the cover: A Patriot missile system fires at a live-fire missile range near Capu Midia, Romania, Jun. 19, 2019 during exercise Shabla 19. The system was operated by Soldiers with 5th Battalion, 7th Air Defense Artillery Regiment. Saber Guardian 19 is an exercise co-led by the Romanian Joint Force Command and U.S. Army Europe, taking place from June 3-24 at various locations in Bulgaria, Hungary and Romania. Saber Guardian 19 is designed to improve the integration of multinational combat forces. (CPT Aaron Smith/174th ADA BDE)



COL David E. Shank

Acting Air Defense Artillery School
Commandant

A Soldier with the 94th Army Air and Missile Defense Command, performs a routine inspection of the Terminal High Altitude Area Defense (THAAD) system, during a system evaluation exercise at Andersen Air Force Base, Guam, Feb. 5, 2019. (CPT Adan Cazarez/U.S. Army)

Developing leaders and driving change

Recently I had the opportunity to speak to a basic combat training graduating class eagerly ready to begin advanced individual training at several military installations across the United States. The five-by-eight card of notes provided me a roadmap of fundamental discussion points for the young Soldiers, all provided in less than five minutes for those who enjoy serving as timekeepers. Crafting my talking points solely centered on recently turned citizens into Soldiers provided me a chance to reflect back on the last three decades; it also offered hope for what lies ahead. These graduates were just a small sample of Soldiers who will operate current and future Air Defense Artillery weapon systems across the operational force.

During my speaking engagement, I indicated the numerous challenges Soldiers face daily. If COVID-19 over the last four months has taught us anything, it is the need for change a new normal. The proverbial talking points of building greater capacity and capability, improving our network architecture with allies and partner nations and working the U.S. Army ADA presence out of a job is a broken record. It is time to move beyond a bingo card of military buzzwords (convergence) and turn talk into action. We must transition from smiles and handshakes to actions taken. As most senior leaders know, this action involves detailed planning and training with sister services, allies and partner nations, all while in



support of overarching objectives. These objectives may include integrating ADA formations in support of large-scale ground combat operations providing fires (or protection) to maneuver formations operating in a dynamic environment; integrated operations with allies and partner nations using cross-domain solutions to share a common air picture; and a continued focus on multi-domain operations against a peer competitor.

Recently, the Combined Arms Center commanding general released his 90-day assessment. He identified two lines of effort: leader development and drive change. These two lines of effort have already made a significant impact on the way business is conducted at the ADA School. Career-long assessments will begin across all Basic Officer Leader Courses in July and will measure a lieutenant's warfighting competence, physical fitness, mental toughness and communication skills to name a few. These assessments will provide the initial baseline for talent management, individual self-development, and facilitate leader-to-student feedback. Another objective in support of leader development is professional military education. Our focus remains on all cohorts and the development of confident leaders who possess the character, commitment and competence expected from members of the Army profession. At the ADA School, we have recently integrated all cohorts into a five-day capstone field training exercise to increase realistic leadership opportunities, exercise Soldiers in a stressful environment, and hone warrior tasks and drills in various conditions.

As mentioned in early March at the AUSA annual 'Hot Topic,' TRADOC intends to go fast and break things. This supports the driving change line of effort. Initially titled "How the Army Fights," and now termed "Waypoint 2028," momentum continues with the Army we have today and the Army we will fight within 2028 at the corps level and below.



Areas impacting the ADA Branch include warfighting functions. Is ADA Fires or Protection? A second area centers on the need for an ADA brigade headquarters. These are just two areas in which concepts are being developed under Waypoint 2028. Additionally, the growth and modernization of the branch will significantly impact change on how we fight. With In-

Air Defense Soldiers scan the horizon during a training exercise at the National Training Center, Fort Irwin, Calif. (Courtesy photo/NTC and Fort Irwin)

tegrated Air and Missile Defense Battle Command System, Maneuver-Short-Range Air Defense, Iron Dome and Directed Energy only a few years away, it is incumbent upon the ADA Branch to message our change and ensure Army senior leaders and sister services' senior leaders clearly understand the technical and tactical roles and mission sets these systems will serve.

In closing, developing leaders and driving change is every leader's business. The ADA Branch has an opportunity to do just that. It will take Soldiers who are willing to have tough, candid conversations with senior leaders, and senior leaders to understand that disagreement is not disrespect. We require field grade officers to have the innate ability to recognize second and third-order effects, solve complex problems while operating in a dynamic environment and take measured risks. We need a noncommissioned officer corps educated, trained and prepared to

execute when called upon. And to end with a quote from then COL Martin Dempsey, 3rd Armored Cavalry Regiment commander in 1997, "Training is a journey, not a destination." Whether it's training, developing leaders, and/or driving change, the branch must be prepared to accept these challenges head on. These are just a few of the changes Soldiers deserve and our nation expects.



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A Terminal High Altitude Area Defense interceptor missile launches during a flight test at the Ronald Reagan Ballistic Missile Defense Test Site in the Marshall Islands, Aug. 30, 2019. The Missile Defense Agency, Ballistic Missile Defense System Operational Test Agency and Soldiers assigned to the 11th Air Defense Artillery Brigade conducted the intercept test. (Courtesy photo/U.S. Army)



The 2019 Air Defense surges

Lessons learned from competition and conflicts

MG Clement S. Coward and MAJ Joshua Urness

The 32nd Army Air and Missile Defense Command (AAMDC) posture in U.S. Central Command increased over 300 percent during the nine months between May 2019 and February 2020. Imminent threats of aerial attack to USCENTCOM and partner nation personnel and critical assets initiated the “2019 Air Defense Surge,” filling critical Air Defense capability gaps. These deployments consisted of every available type of U.S. Army Air and Missile Defense (AMD) system, explicitly requested by the USCENTCOM commander and approved by the Secretary of Defense (SECDEF), including Land-Based Phalanx System (LPWS), Stinger and Avenger, Sentinel Radar, Patriot, and Terminal High Altitude Air Defense. In total, these capabilities comprise the largest deployed AMD force since the invasion of Iraq during Operation Iraqi Freedom (OIF), and over half the currently available AMD forces in U.S. Forces Command.

This article tells the story of re-defining Air Defense Artillery’s (ADA) role in contemporary conflict, through the context of the “2019 Air Defense Surge” and three major inflection points: Increased competition requires flexible AMD; off azimuth threats require innovative solutions; high-end competition and conflict require tiered, layered defense. Then, the article identifies how the inflection points transformed AMD’s role in the joint fight. Finally, the article identifies lessons learned in crucial areas such as risk, flexibility and training.

Inflection Point One: Increased competition requires flexible AMD

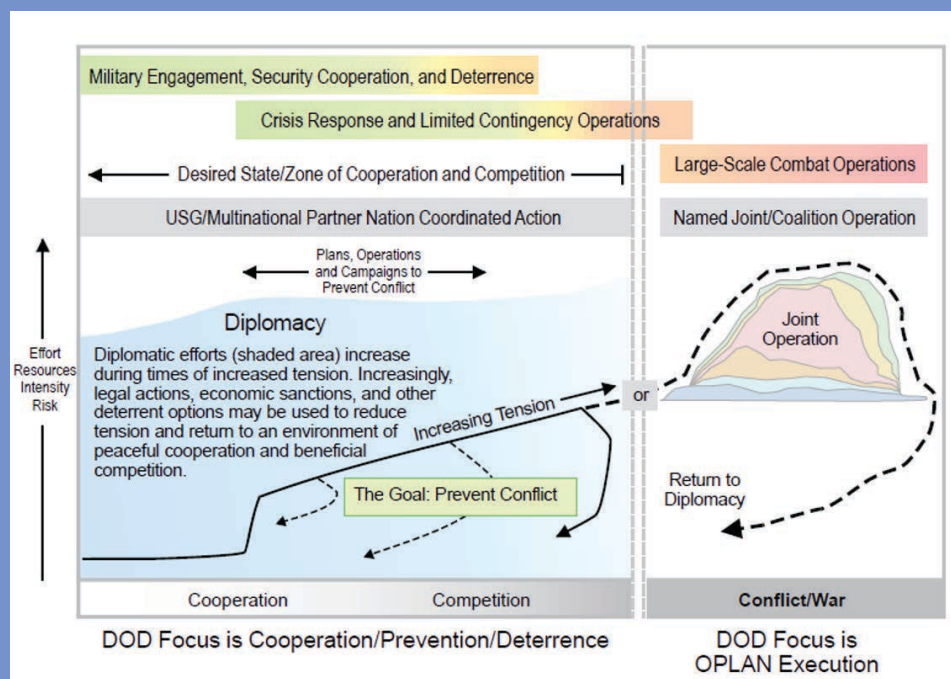
Iranian escalations led to the activation of FORSCOM's Patriot Global Response Force (GRF) capability in May 2019. Subsequent micro-escalations resulted in the Iranians shooting down a U.S. Navy

drone over the Strait of Hormuz on June 20, 2019, which resulted in additional non-Global Force Management Allocation Plan (GFMAP) increases in USCENTCOM Patriot capacity. Thirty-second AAMDC dynamically shifted new AMD capability across the battlefield to counter new threats and changes in the operational environment (OE). In one case, 32nd AAMDC diverted one Patriot battery planned to execute a standard, rotational Patriot deployment to Kuwait to an austere, undeveloped location with little notice. That battery established an expeditionary Patriot site and occupied it for several months, before moving to a third location.

Inflection Point Two: Off azimuth threats require innovative solutions

On Sept. 14, 2019, Iran or its proxies attacked multiple Saudi Arabian critical economic infrastructure sites with a combination of cruise missiles and unmanned aerial systems (UAS). The attack occurred nearly simultaneously from unexpected directions and along hard-to-detect avenues of approach, complicating attribution of its origin. Following the attack, the Kingdom of Saudi Arabia (KSA) requested U.S. Air Defense forces to support Royal Saudi Air Defense forces, along with technical and procedural assistance to enhance Saudi Integrated Air and Missile Defenses (IAMD). The U.S. government supported this request, and USCENTCOM established a “forward” organization in Riyadh tasked with, among other things, integrating U.S. AMD assets with Saudi Arabian AMD assets. The Department of Defense ordered deployments of non-rotational and non-GFMAP AMD forc-

Figure 1. The Conflict Continuum. (JP 3-0, Joint Operations)



es consisting of a variety of AMD systems to support the USCENTCOM effort in KSA. Thirty-second AAMDC units sourcing these requirements deployed to austere locations across Saudi Arabia and established Patriot sites with assistance from U.S. Army Central Command (USARCENT) operations support and force sustainment units. The ongoing conflict between Saudi Arabia and Yemen made these AMD forces especially vulnerable to attack from multiple threat azimuths, highlighting a critical capability gap in the single-battery defense of an asset, similar to the problem presented by the complex Sept. 14, 2019 attack. This problem was overcome with creative, critical thinking by 108th Air Defense Artillery Brigade junior officers and field grade officers out of Fort Bragg, N.C. They developed new methods of system employment which expanded the capability of a single battery to achieve effects across a more significant arc and non-complementary target lines.

Inflection Point Three: High-end competition and conflict require tiered, layered defense

Throughout December 2019, Iranian-backed Shia militias attacked U.S. bases in Iraq (IQ): Al Asad Airbase (AB), IQ, on Dec. 3; a Hezbollah rocket attack on Balad AB, IQ, on Dec. 5; and a militia rocket attack against the diplomatic area at Baghdad International Airport, IQ, on Dec. 9.¹ Then, a rocket attack in Kirkuk, IQ, killed a U.S. contractor on Dec. 27. The U.S. responded on Jan. 3, 2020, by ordering a strike on the Islamic Revolutionary Guard Corps Quds Force commander, General Qassem Soleimani. Four days later, on Jan. 7, in an unambiguous attack, the Iranians launched 18 tactical ballistic missiles (TBM) at Al Asad AB and Erbil, IQ, almost as many TBMs as the Iraqis launched at U.S. forces during the 2003 in-



Figure 2. “Conflict Continuum” in context of Multi-Domain Battle describes the new reality of the competition–conflict cycle not captured by the linear peace to war continuum in current military doctrine. (D.G. Perkins/Military Review)

vasion of Iraq. The Iranian attack highlighted an urgent protection capability gap for large U.S. and coalition force concentrations across the USCENTCOM area of responsibility. The primary solution for this gap was the deployment of additional AMD capability, consisting of diverted GFMAP 20 Patriot forces from their projected deployment locations, extending GFMAP 19 and GRF Patriot, deploying non-GFMAP short-range air defense (SHORAD) capability (Avenger, Stinger, Sentinel), and reallocating LPWS from another USCENTCOM area of operations (AO). The deploying units staged in Kuwait, conducting technical and procedural integration training necessary to effectively execute a tiered, layered defense of an asset with a mix of ADA systems.

Simultaneously, 31st Air Defense Artillery Brigade at Fort Sill, Okla., established an integration test-bed to develop best practices and troubleshoot system integration problems between SHORAD systems and Patriot. ADA forces moved into Iraq using a deliberate, phased approach – first emplacing capabilities in a layered approach, LPWS for point and rocket defense, then Avenger/Stinger for counter-UAS, and finally Patriot for missile defense. Partway through execution, the movement timeline significantly accelerated. Prior coordination with the AO owner, Combined Joint Task Force – Operation Inherent Resolve (CJTF-OIR), enabled the AMD packages to meet the end state of rapidly establishing operational capacity at designated locations within days

1 US-Iran: A History of Rising Tension. (2020). Airforce Magazine, January–February, 20–21.

of arrival for LPWS and hours for Patriot – locations attacked just days earlier by rockets.

Understanding Air Defense's role in contemporary conflict

Air Defense simultaneously transverse competition and conflict. The ascendancy of aerial threats below the threshold of war requires AMD forces to perform their large-scale combat operations (LSCO) mission, in an enhanced competition or conflict posture, to sufficiently enable joint force operations. Air Defense capacity and posture increases serve as milestones along the "increased tension" highway. While the U.S. government and partner nation coordinated action occurs to off-ramp escalations, Air Defense is setting conditions for joint force strike options – preparing to absorb the first counterattack-strike.

More precisely, Air Defense's "steady-state" operations now exist wholly in the enhanced posture of Joint Publication 3-0's Joint Phasing Model – Phase I: Deter, while the majority of the joint force operates in Phase 0: Shape. Air Defense transition to Phase II: Seize the Initiative, is a condition for the joint force to phase transition from Phase 0 to Phase I, and so on, along the notional Joint Phasing model. The purpose of the conditions-based phase transition is to balance risk to the force and risk to the mission at the operational level of war.

Air Defense must transition phases before the joint force to prevent joint force culmination as competition escalates, i.e. enabling the joint force by neutralizing adversary counterattacks against U.S. and coalition force projection nodes used to execute joint strike options. This concept is best understood, beyond a notional phased model, through the spectrum lens of which activities occupy the preponderance of mil-

itary effort. Air Defense Artillery carries a more significant burden of "Deter" and "Seize the Initiative" efforts before the majority of the joint force can begin these activities. Therefore, Air Defense performs activities associated with its LSCO mission, while other joint forces may not, or cannot. This gap closes as the joint force fully transitions to dominate.

Thirty-second AAMDC's experience in 2019 and 2020 closely reflected this phenomenon, described in the context of Multi-Domain Battle as the "cyclical nature of war where there are only positions of relative advantage," between competition and conflict (see figure 2).² During "Inflection Point One," the first U.S. response to anticipated increased tensions was the SECDEF approving activation of the Patriot GRF: activation of Operations Plan (OPLAN) AMD force packages. At each subsequent inflection point noted above, Air Defense posture and capacity increased across USCENTCOM. Even during de-escalation, posture boomeranged between around 150 and 300 percent of the GFMAP 19 and 20 postures. The rapid proliferation of low-cost, long-range, precision munitions and UAS capable of challenging U.S. forces throughout the depth of the battlefield means the dissolution of "safe havens" and contiguous AOs. The continued ascendancy of these capabilities as a core element of the competition phase, and AMD as an essential condition for joint force phase transition and OPLAN execution, likely means Air Defense's role in the competition-conflict cycle is the new normal.

Lesson Learned One: Rethink risk at the operational level

At the operational level, commanders accept and balance risk between doctrinal roles. Army Technical Publication 3-01.94, U.S. Army Air and Missile Defense

Command Operations, specifies three primary roles for the AAMDC commander: Theater Army Air and Missile Defense coordinator (TA-AMDCOORD), deputy area air defense coordinator, and senior air defense commander. Thirty-second AAMDC also serves as the AMD Training Readiness Authority (TRA) for USFORSCOM.

The "2019 Air Defense Surge," which included the deployment of the 32nd AAMDC Headquarters, required the commander and staff to accept less risk in roles supporting USCENTCOM activities, and more risk supporting USFORSCOM TRA activities. Altering the risk framework to balance risk across AAMDC roles instead of distinct military operations required developing unorthodox solutions and embracing distributed mission command. One of the primary solutions to balancing risk at the operational level was breaking out of the standard nine-month deployment paradigm. The staff identified periods of vulnerability for each AAMDC role and shifted to the need, enhancing staff posture based on capability requirement. Requirements were designed based on functions within supported AAMDC roles, instead of the traditional Napoleonic G-staff. Driving factors of increased staff requirements include increased span of control, theater transitions between units or software, and the necessity of proximity to activities as a means of enabling coordination. The organization may need a heavier TAAMDCOORD posture in specific locations due to increased intra-theater mobility coordination or sustainment support requirements. Such deployments may last as few as four to six months. The long-term benefit of flexing staff based on functional requirements and role-based risk decisions is the preservation of staff deploy-to-dwell, and much like Special Forces units, the sustainment of operational tempo. However, this strategy requires a well-thought-

² Perkins, D. G. (2017, December). Multi-Domain Battle The Advent of Twenty-First Century War. Military Review. <https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/November-December-2017/Multi-Domain-Battle-The-Advent-of-Twenty-First-Century-War/>

out projection and anticipation of where risk decisions are necessary. Failure to accurately project periods of vulnerability will result in staff being out of position as the force transitions or escalates along the conflict continuum, possibly leaving them out of the fight.

Lesson Learned Two: Flexibility requires greater staff integration across the joint force

The dynamic nature of shifting priorities of protection and employment locations demands a higher level of flexibility across staff to plan and execute operations under ambiguous circumstances. The best way to enable staff for such operations is to ensure increased integration with higher echelons, and adjacent units, through liaisons and bolstering the TAAMDCOORD role. Every warfighting function and component of the joint force enabled the deployment of ADA forces, from U.S. garrisons to theater hubs and austere locations across USCENTCOM. Rapid site occupation and improvement required close coordination with all warfighting functions, active, national guard and reserve units. The deliberately phased and accelerated movement into Iraq's non-permissive AMD environment was achieved, in large part, due to a close coordinating relationship with CJTF-OIR.

Lesson Learned Three: Plan to deviate from the plan

The usual method of precision deployment to well-defined locations does not suit the competition-conflict cycle. During each 32nd AAMDC inflection point, force-flow was either diverted to alternate locations or repositioned across the theater to provide a responsive defense of critical, joint mobile capabilities. In the case of "Inflection Point Two," ADA forces deployed on short notice to unimproved, unplanned locations to protect partner-nation critical

economic infrastructure. In another inflection point, for example, AMD capability re-routed to flow into theater overextended ground lines of communication due to possible threats to planned force flow. For these reasons, the command decided to cease pre-deployment site surveys (PDSS).

On several occasions, operational requirements necessitated the reevaluation of the standard, rotational 25-day relief-in-place (RIP) model for batteries replacing other batteries in the theater. The constant intra-theater shifting of AMD capability, multiple extensions of unit deployments, and strategically dictated timelines for establishing operational capability made the standardized RIP process irrelevant. Decrements to the standard RIP model require staff, at echelon, to make risk recommendations to higher authority levels on methods to mitigate risks of an abbreviated RIP. Risk is further mitigated by commanders and staff identifying critical components of the RIP process for each location, to shorten if necessary. Areas of special consideration should include property transfers, location-specific information, and movement of departing unit's equipment (whether pushed by departing unit or newly arrived unit). Sometimes, units move from locations without relief from other units, leaving sites unoccupied. Unoccupied sites should be treated as "warm bases," or "battle positions," and periodically surveyed to validate their potential to support future or contingency AMD operations i.e. new construction that could obstruct radar search sectors, new placement of large antennae that create electromagnetic interference problems, occupation of site area by other units. Units support a flexible RIP by preparing to deploy to unfamiliar locations (without PDSS), emphasizing maintenance and the skillsets required to rapidly occupy "expeditionary" sites and connect to command and control (C2) networks. Additionally, to succeed in this environ-

ment, the unit movement officer and hazardous material certifier must be high-quality Soldiers. Commanders must consider talent management when appointing Soldiers into these positions.

Lesson Learned Four: Rethink risk at the tactical level

Strategic objectives frequently constrain tactical commanders from perfect, doctrinal execution because of increased tempo within the competition-conflict cycle. This phenomenon leads to situations where commanders must operate under conditions of uncertainty, with ambiguous guidance. Operational level commanders seek to clarify guidance by linking strategic objectives to tactical end-states, but the system dissolves without deliberate acceptance of prudent risk at each echelon.

Risk is a challenging topic for most Air Defenders because many still live in the shadow of the 2003 Operation Iraqi Freedom fratricides. Those events initiated the development of doctrine and procedures predominantly focused on risk control, leading to an anti-risk acceptance culture. Since 2003, ADA primarily operated in "Shape" or "Deter" phases, limiting the branch's exposure to the highly fluid competition-conflict environment. Ultimately, the skillset required to assess and accept prudent risk in such environments atrophied, and absolutely requires regeneration.

One of the most significant examples of a deliberate approach to accepting prudent risk was the culture-enabled critical and creative problem solving that generated a solution to the multi-axis threat discussed in "Inflection Point Two." Air Defense Artillery fire control officers (ADAFCO) and Patriot Top Gun certified company grade officers, presented with a problem and only physics as a barrier, devised a solution that enabled a Patriot battery to execute engagements across the entire arc



Soldiers from Bravo Battery, 1-7th ADA react to an attack on the perimeter of their site during Roving Sands 2019 in the Dona Ana Area of New Mexico. (CPT Brandon Nalley/U.S. Army)

of its radar. This solution broke the “lazy-W” launcher paradigm. It gave commanders risk options for balancing the multi-axis threat, and depth of defense against a most likely aerial avenue of approach.

During “Inflection Point Three,” credible threats and strategic-level operational variables necessitated the acceleration of AMD movements from Kuwait to Iraq and site occupation timelines. Additionally, the movement was constrained by logistics capacity, which prevented simultaneous site occupation and employment of a complete “minimum engagement package.” The strategic objective to provide Air Defense fires by a given timeframe was only achievable through accepting prudent risk in establishing an initial operational capability short of the doctrinal and customary procedural C2 requirements. Commanders bought back risk as they continued to build capacity as it arrived. In this way, risks are

visualized through a spectrum of tempo, mission requirements, and AMD C2 and engagement capability.

Another problem that 32nd AAMDC experienced as a result of the “2019 Air Defense Surge” was a greatly expanded span of control that made site manning under current crew certification standards unachievable. Thirty-second AAMDC solved this problem by implementing a theater-wide policy that allowed certified operators to serve interchangeably on other certified crews (under certain circumstances), without necessitating additional crew certifications.

The Air Defense Branch must focus on developing the skillsets necessary to develop risk-informed options and make risk recommendations through dynamic training events that replicate the competition-conflict environment. A critical tool in this process is the doctrinal “Commander’s Assessment,” which assists

commanders with adjusting intent or objectives with a continually changing environment, linking the operations process and the commander's decision cycle. Additionally, staffs make risk recommendations to each higher echelon in the form of risk to mission, the risk to the supported force, and the risk to the AMD force, requiring a thorough comprehension of the nature of their AMD effects and its role in the OE. The ability of the commander and staff to effectively communicate those risks will either enhance the AMD force’s responsiveness to the AMD capability gap – or relegate it to irrelevance.

Lesson Learned Five: Training must emphasize speed, flexibility and adaptation

The hallmark of the “2019 Air Defense Surge” was flexibility and adaptation. Deploying Soldiers likely assumed they would occupy well-developed, rotational Air Defense sites. Even Soldiers not expecting to deploy probably believed they would, at the very least, occupy an established U.S. military site. Instead, changes in the OE drove requirements for Air Defenders to adapt to their new role in the conflict continuum. Most surge units deployed to locations different than initially projected, or moved multiple times to alternate locations. Over half of the currently deployed AMD units in USCENTCOM established and occupied a new site after arrival in theater.

The training event that contributed the most to enabling surge units to adapt to the OE was Roving Sands 2019. Roving Sands 2019 emphasized mobility for survival, dynamic and complex threats including UAS and jamming, changing protection priorities, and working with various echelons of adjacent, higher and supporting units to achieve mission success. Most of all, it trained Soldiers, staff and leaders to be uncomfortable and adapt. The units that ex-

perienced the most change during the 2019 – 2020 “surge” participated in Roving Sands 2019. The GRF unit deployed during “Inflection Point One” also deployed as training audience members to Fort Bliss, Texas, training areas for Roving Sands. The battery that moved to three different locations during a single deployment, including building new Air Defense sites in undeveloped areas, participated in Roving Sands. The brigade headquarters at Roving Sands 2019 led surge units as the operational control authority of most AMD capabilities in USCENTCOM, from “Inflection Point Two” to spring 2020, absorbing the coordination and support requirements generated from the changing OE. Unfortunately, due to the exponential increase in overseas requirements on the 32nd AAMDC, the command did not execute Roving Sands in 2020. Roving Sands should be conducted when possible, as the marquee AMD preparation tool for the new OE.

SHORAD and High to Medium Range Air Defense system integration into a layered defense should be emphasized more strongly in preparation for future unit deployments. The Jan. 7, 2020, attacks on U.S. and coalition bases in Iraq generated an urgent request for such a defense, likely to be a staple in future competition and conflict. In this particular case, units had time to not only train in staging areas for a month but set up testing locations in CONUS. It is unlikely that future employment of this type of defense will be as time permissive. Therefore, the only way to be responsive to such requests is to have the institutional knowledge already resident in the formation. Such knowledge should include comprehension of joint kill chains and technical and procedural integration skills.

Lesson Learned Six: Develop greater C2 node capability

One of the most complex challenges of the rapid increase in AMD forces and distance between

defended assets was the expansion of Air Defense C2 node requirements. The change was so significant that it required constant theater-level management by the brigade, and consistent evaluation by operational level planners. Expansion also spanned AOR’s, from the Arabian Gulf to CJTF-OIR, which required double ADAFCO manning at Control and Reporting Centers. Each battalion operated across at least two countries, requiring multiple C2 nodes and associated crews. Multiple battalions operated across multiple AORs. Increased C2 node requirements were materially solved through the deployment of Headquarters, 32nd AAMDC’s Dismounted Patriot Information Coordination Centrals (DPICC). However, 32nd AAMDC could not fully source required manning to operate its DPICCs. Thus, battalions sourced their manning requirement. The downstream effect of this was that most battalions internally sourced at least six “ICC” crews to support as many as three C2 nodes. Increased crew manning requirements at the battalion level taxed battery echelon crews for support, resulting in insufficient numbers of trained operators at the battery level. The solution to this personnel challenge is to build a bigger bench of certified operators at the battery level.

Additionally, cross-training experienced battery-level operators at the battalion level enabled the flexibility necessary to adapt to increased C2 node requirements later. Neither of these solutions addresses force management challenges the branch continues to face, with either manning or structure. However, solutions to those problems are outside the focus of this article.

Conclusion

Since Operation Desert Storm, AMD capability played a vital role in USCENTCOM. While some academics challenged the success rate of AMD engagements, many senior political and military lead-

ers argued “who cares?” The political and psychological impact of AMD on the battlefield was undeniable. ADA units sustained a continued presence across the Arabian Gulf, through Operation Determined Resolve and Southern Watch, until Operation Iraqi Freedom in 2003. Throughout that time, ADA leveraged exercises like Roving Sands to develop capabilities and prepare units for conflict. ADA entered OIF with new interceptors, new organizational constructs (the AAMDC), and the spirit of innovation that ADA is known for i.e. short-stop batteries. ADA successfully engaged all eight Iraqi missiles that factored critical assets, including saving the ARCENT Headquarters and, the 101st Airborne Division (as proclaimed by the division commander). Each of these conflicts required significant mobility, flexibility and adaptation, built on sustained periods of training, collective training and pushing the limits of technology to prepare for the next fight. While some of ADA’s main efforts since OIF may seem nominal, the branch must continue building toward the next fight. The “2019 Air Defense Surge” provided a unique opportunity to see ourselves and build a bridge to the future. We learned about risk, mobility and flexibility, and our role in the contemporary and future joint fight. We also saw the ways Integrated Air and Missile Defense Battle Command System could revolutionize ADA’s contribution to the joint force. We must continue to move forward.

MG Clem Coward is the commander of 32nd Army Air and Missile Defense Command (AAMDC). He took command in the fall of 2018. Previously, he served in a variety of joint staff and Army staff positions, positions within the 32nd AAMDC, and commanded the 11th Air Defense Artillery Brigade. MAJ Joshua Urness serves as Coward’s executive officer.

Getting ahead of the threat

A Patriot battalion's journey to modernization

CPT Peter Williams

After six months of tireless work and instruction, the 3rd Battalion, 2nd Air Defense Artillery Regiment (3-2nd ADA BN) became the first battalion in the Air Defense Branch to simultaneously complete their Forward Sustainment Maintenance Program (FSMP) and Post Development Build (PDB) 8.0 Modernization of all Patriot systems within organic facilities during the third quarter of fiscal year 2019. This monumental achievement is a testament to the dedication of the Soldiers of the 3-2nd ADA BN and supporting civilian agencies.

Planning for this operation began in early November of 2018, before 3-2nd ADA returned from their successful strategic deployment to the USCENTCOM area of responsibility. The Lower Tier Project Office (LTPO) funded the FSMP process and allotted five Patriot batteries (one Headquarters and Headquarters Battery and four Patriot firing batteries) seven weeks to ensure critical equipment was operating in accordance with -10/-20 standards in an effort to extend the equipment's operational life. Although separate, FSMP and PDB 8.0 modernization are sequential and connected, requiring the successful completion of FSMP prior to the commencement of PDB 8.0 modernization. During the FSMP process, five Patriot batteries consisting of a combination of Raytheon civilian contractors, unit-level operators and the battalion's Intermediate Support Element committed over 8,000 man hours and executed

deep maintenance on major Patriot end items, including radar sets, engagement control stations (ECS), antenna mast groups and communications relay groups (CRG). Additionally, in support of FSMP operations, the 3-2nd ADA BN's supply support activity managed the reception, turn-in, and shipment of over 2,000 parts estimated in value of over \$1.5 million. FSMP was executed on schedule and on budget setting the ground work for the PDB 8.0 upgrades.

Upon the five Patriot batteries' staggered completion of the FSMP, unit equipment was immediately inducted into an intensive 10-week PDB 8.0 Patriot modernization upgrade operation. PDB 8.0 upgrades provided the 3-2nd ADA BN with the most modernized Patriot Missile System equipment configuration C3+ operating software and hardware. In summary, these upgrades included the replacement of legacy digital processors in the radar, modern man station upgrades in the ECS and information coordination central (ICC), and Combined Cryptographic Modernization Phase-1 communications hardware upgrades for the ICC/ECS and CRG systems. The execution of the PDB 8.0 upgrades was executed in concert with the TRADOC Capabilities Manager, LTPO, Raytheon and unit-level operators, committing over 8,000 man hours.

Simultaneous to the modernization process, an eight-week operations and organizational maintenance-focused new equipment training program, managed by

both LTPO and Aviation and Missile Command was administered by Raytheon instructors. Third-2nd ADA's Patriot equipment operators, communication specialists and logisticians received daily classroom and hands-on instruction with practical exercises confirming Soldiers' understanding of the upgrades and ability to operate and sustain the battalion's newly upgraded equipment.

The lead planner for the operation was CW3 Lewis Heck, the battalion readiness coordinator for 3-2nd ADA BN. "This was the first time both FSMP and modernization were performed simultaneously, and the very first time at home station," he said, highlighting the difficulty of the innovative process. "Despite the complexity, we got it done."

Moreover, while committing 90 percent of the battalion's maintenance facility to FSMP and PDB 8.0 upgrades, the battalion's readiness and maintenance officers developed and executed a dynamic maintenance plan to sustain and maintain the remaining battalion equipment. These efforts resulted in the successful reception of conventional equipment from deployment and a sustained operational readiness rate of 97 percent.

Another integral component contributing to the completion of the battalion's equipment upgrades was the five-week reset and modernization of its early warning and command and control systems. During this upgrade, battery command posts and tactical control stations received upgraded computer software and hardware, further enhancing battery and battalion early warning capabilities. The 3-2nd ADA BN's own Command, Control, Communication, Computers and Intelligence (C4I) Systems Integrator, CW2 Joseph Frey, played an invaluable role in this process by single-handedly planning and leading the deep maintenance required to prepare the battalion's battery command posts and tactical control stations for upgrades.



Raytheon contractors performed deep conventional maintenance and reset on an engagement control station within the bay of the 3-2nd ADA Motor Pool. (U.S. Army Photo by CW3 Lewis Heck)

“It had to get done,” Frey said. “Our C4I equipment needed to be reset before we started any upgrades, and we were working with limited time.”

Thanks to the combined efforts of internal and external resources, the 3-2nd ADA BN finished their equipment upgrades in time to test them in a field-training exercise, designed to build confidence in the Soldiers’ proficiency with their assigned systems.

The 3-2nd ADA BN achieved yet another first as they tested the functionality of their modernized equipment with a capstone exercise. The objective of the capstone was to establish communications and data transfer between all four Patriot fire units and the battalion fire direction center through both Patriot and C4I systems. The C4I portion of the exercise, led by CPT Mario Solis, battalion S6, and Frey, and supported by Raytheon specialists, resulted in the first ever establishment of V-Lan 10 and Joint Range Extension Application Protocol links using the very high frequency backbone be-

tween the ICC and ECS. This capability enabled operators to pass the air picture, internet relay chat, Microsoft Outlook data, and other means of data exchange from the battalion tactical operation center to the battery command post. This capability will prove to be an invaluable addition for redundant and expedient mode of transferring data and increasing command and control capabilities throughout the battalion. The successful execution of the capstone exercise demonstrated the battalion's understanding and ability to operate newly upgraded Patriot equipment.

The home station execution of FSMP and PDB 8.0 modernization on the 3-2nd ADA’s Patriot equipment enabled its Soldiers to train and fight on the most advanced Patriot equipment available. After a successful validation of the equipment, the battalion has since incorporated the new operating procedures into their training for future certifications.

While the execution of the FSMP and PDB 8.0 was the battal-

ion's decisive operation, several shaping operations occurred in concert, for example: individual and crew serve weapons ranges, warrior tasks and battle drills and sustaining and building individual and crew readiness. The battalion effectively built relationships with civilian stakeholders while developing and communicating a comprehensive Patriot modernization plan to the lowest level. The successful execution of the battalion's FSMP and PDB 8.0 modernization is a testament to the dedication of supporting civilian agencies and the Soldiers of the 3-2nd ADA BN.

CPT Peter A. Williams graduated from the United States Military Academy at West Point and commissioned through the same school in the Air Defense Artillery branch. Williams deployed for Operation Spartan Shield in 2016 and Operation Inherent Resolve in 2018. He has been decorated with two Army Achievement Medals, a Global War on Terrorism Expeditionary Medal, a Global War on Terrorism Service Medal, an Army Service Ribbon and two Army Overseas Service Ribbons.



SSG Tiana Trent with Charlie Battery, 5th Battalion, 4th Air Defense Artillery Regiment, 10th Army Air and Missile Defense Command, graduates from Army Avenger Master Gunners Course at Fort Sill, Okla., April 16, 2020. Trent is the first African American female to complete the Avenger Master Gunner Course in the U.S. Army. (SSG Keith Murphy/U.S. Army)

US Army's newest Avenger Master Gunner makes history

1LT Ashli Malone

On April 16, 2020, at Fort Sill, Okla., the Air Defense Artillery Avenger Master Gunner Course graduated its latest class of nine students, one of who made history. SSG Tiana Trent, a native of Canton, Ohio, is celebrated as the first African-American female to attend and complete the course since its origin.

Trent is an Avenger crew member (14P) serving as a squad leader in Charlie Battery, 5th Battalion, 4th Air Defense Artillery Regiment located in Ansbach, Germany, the Army's only Short-Range Air Defense (SHORAD) battalion. After 11 years of service in Air Defense, to include three deployments to Iraq and one to Afghanistan, Trent

eagerly accepted the challenge of becoming an Avenger Master Gunner, one of the highest honors in the SHORAD community. Her journey to complete the Master Gunner Course began in February during the unit's Avenger Master Gunner Course train-up where she quickly learned that her determination and will power would soon be put to the test.

"It's unbelievable!" exclaimed Trent when asked how she felt about making history in the Air Defense community. She is one of five females to complete the course and the first African-American female to do so.

The Avenger Master Gunner Course consists of 35 days of rig-

orous, knowledge-packed training to turn Avenger crew members into subject matter experts on their weapon system, equipped to strengthen readiness at the lowest unit level. Students not only learn detailed hands-on aspects of the weapon system such as productive trouble-shooting, safety parameters and maintenance procedures, but also effective use and emplacement of the weapon system to accomplish any given mission.

Completing the Avenger Master Gunner Course not only allowed Trent to gain an in-depth understanding of her weapon system's functions and employability but also instilled valuable skills which will assist her in the Maneu-



SSG Lewis Washington (left) from Bravo Battery, 5th Battalion, 4th Air Defense Artillery Regiment, 10th Army Air and Missile Defense Command, and SSG Tiana Trent from Charlie Battery, 5-4th ADAR, stand in front of an Avenger as they celebrate graduating from the Army Avenger Master Gunners Course. The two Soldiers graduated from the 35-day course at Fort Sill, Okla., on April 16, 2020. Additionally, Trent is the first African American female graduate in the history of the Avenger Master Gunner Course. (SSG Keith Murphy/U.S. Army)

ver-SHORAD fielding and transition.

BG Gregory Brady, commander of 10th Army Air and Missile Defense Command, said that Trent exemplifies the best of who we are in 10th AAMDC. “I am eager to see how she will use her new expertise to train other Soldiers and enhance the unit’s capabilities; paving the way for the new M-SHORAD fielding in Fiscal Year 2021,” Brady said.

The Stryker-based M-SHORAD system will provide better protection of maneuver forces at increased ranges and with exponentially improved mobility.

Upon hearing of her accomplishment, LTC Todd Daniels, commander of 5-4th ADA, said: “We are proud of all of our non-commissioned officers who have passed the Avenger Master Gunner Course,” said Daniels. “I am exceptionally pleased that

Trent was able to become the first African-American female to earn the title of Avenger master gunner and serve as an example for so many others to follow.”

To aspiring Avenger master gunners, Trent urges service members to cultivate a positive support system and remain “humble and hungry” while relying on drive and self-determination to propel them to success. Trent remains eager for more opportunities and challenges to better herself and her organization.

Trent believes that her success in the course is a valuable step in the right direction for more representation of female service members within this elite group in the Air Defense community. She is proud of her accomplishment and is hungry for more opportunities to blaze trails, as she embraces the mantra, “No excuses, failure is not an option.”

Her leadership and her Soldiers within Chaos Battery and 5-4th ADA are proud of her incredible milestone and look forward to seeing her succeed in the future.

U.S. Army Europe ensures the consistent availability of combat-credible U.S. Army forces in support of our allies and partners and the stability and security of Europe. Readiness ensures that the Soldiers with 5-4th ADA have the tools and training they need to be lethal, reassure our allies and deter potential adversaries.

1LT Ashli Malone, a native of Athens, Ala., is currently serving as a platoon leader in 5th Battalion, 4th Air Defense Artillery Regiment. Malone commissioned from Troy University in 2018 with a bachelor's degree in Political Science - International Relations. She completed the Air Defense Artillery Basic Officer Leader Course in 2018, and is now stationed in Ansbach, Germany.

Air Defense Soldier to be first female promoted to pinnacle rank

SGT Christopher J. Gallagher

For the first time in the history of the U.S. Army Air Defense Artillery Branch, a woman will be promoted to the rank of Chief Warrant Officer 5 this summer.

This Soldier is U.S. Army Chief Warrant Officer 4 (Promotable) Lakeasha Babers, an Air and Missile Defense Systems tactician, currently assigned to the 108th Air Defense Artillery Brigade, Fort Bragg, N.C.

"Myself, as well as my mentors, are extremely excited about this promotion," said Babers. "We know there are no limits for females."

Babers will be heading to the 32nd Army Air and Missile Defense Command, Fort Bliss, Texas, later in the year to continue her already impressive 25-year career.

"Chief Warrant Officer 5 is achieved by so few and her selection is indicative of who she is as a Soldier and leader," said COL Charles Matallana, commander of the 108th Air Defense Artillery Brigade.

Growing up in Tuskegee, Ala., Babers always knew she wanted to join the Army. When it came time to decide what job she wanted, her interest was in Air Defense Artillery from the start. So she chose to be an Army Patriot operator and system mechanic.

"I liked the technical aspect of Air Defense," Babers said. "It gave

me knowledge and experience I would never have received if I hadn't joined the Army.

"My job was to keep everything operational, so we could fight when we needed to fight," she added.

Over the next 10 years, Babers saw herself promoted to the rank of staff sergeant, but then seemed to hit a 'ceiling.'

"I was looking at the career field around me grow, and at that time, the progression was a little slow. I wasn't certain that I would see sergeant 1st class," she said.

With that in mind, she decided to join the Warrant Officer Corps.

In October of 2004, Babers went to the Warrant Officer Candidate School and Warrant Officer Basic Course. Upon graduation, she was assigned to 31st Air Defense Artillery Brigade, beginning a new chapter in her career and life.

"When I first joined the Warrant Officer Corps, there were a few friction points, but I felt I didn't need to prove myself, and I made my own way," Babers said. "With the hunger I had to succeed, I was able to grow."

And that she did. She saw herself performing jobs throughout the career field, from the operational side to the technical.

Acknowledging her diverse experience, Matallana said of Babers, "She is the epitome of what we

want and expect of our warrant officers. In addition to the technical knowledge and expertise she brings to our unit, her genuine desire to teach and mentor others is what makes her unique. I have no doubt she will continue to lead and contribute to the air and missile defense enterprise with excellence."

Over time, she created bonds with Chief Warrant Officer 4 Trephya Sumpter and Jody White, both admired and impactful leaders in the air defense community.

"They were outstanding female mentors," said Babers, "and I am excited that with their guidance and support, even now in their retirement, we have broken the barrier," she added regarding her upcoming promotion.

Now, after 15 years as a warrant officer, Babers is making history. Through her hard work and dedication, she is setting a precedent for others to follow. With no end in sight, soon to be Chief Warrant Officer 5 Babers will continue her career, being an example of success through dedication to her profession.

SGT Christopher J. Gallagher currently serves as the 108th Air Defense Artillery Public Affairs noncommissioned officer.

"There are no limits to what you can achieve if you put your mind to it and sometimes it may be hard; but hard does not mean impossible."
—CW5 Lakeasha Babers



(U.S. Army/Courtesy photo)



BG Gregory Brady, 10th Army Air and Missile commanding general, walks with LTC Justin Logan, commander, 5th Battalion, 4th Air Defense Artillery Regiment, through the unit's motor pool visiting with junior leaders and Soldiers at Smith Barracks, Germany. (SFC Jason Epperson/10th AAMDC)

10th Army Air and Missile Defense Command remains ready to fight despite COVID-19

CPT Rachel Skalisky

Although the world took a pause due to COVID-19, the Air Defense mission in Europe never stopped. The 10th Army Air and Missile Defense Command remained ready to act at a moment's notice. The leadership and Soldiers had to find unique ways to stay integrated with our foreign allies and partners and maintain unit readiness, while taking appropriate measures to protect the force.

BG Gregory Brady, commanding general, 10th AAMDC was able to remain connected with our foreign allied and partner AMD leaders throughout the continent by virtual key leader engagements. These ongoing engagements ensure we maintained and continued to develop our strong air defense

alliances throughout the pandemic, demonstrating our commitment to our NATO allies and partners and the deterrence of the European theatre.

The 10th AAMDC Patriot and short-range air defense (SHORAD) battalions were able to sustain readiness by adapting to their training by implementation of virtual measures, physical distancing, handwashing and wearing facemasks.

"The level of readiness for air and missile defense proved critical; we actually had Soldiers and leaders finding unique ways to mitigate risk to our formation," Brady said. "Whether it was 5th Battalion, 7th Air Defense Artillery Regiment executing their

Patriot combined-arms training strategy or 5th Battalion, 4th Air Defense Artillery Regiment, the Army's newest SHORAD battalion, executing a level of gunnery physical and digital to sustain their most critical air and missile defense roles."

CPT Michael Morgan, battery commander, assigned to Alpha Battery, 5-7th ADA explains that sustaining readiness while training up new Soldiers is difficult enough without COVID-19 restrictions.

"We have to be more deliberate and calculated when it comes to training and planning," Morgan said. "We are learning how to lead at the battery level without always being physically present or hands



SPC David Buemi, a Patriot launching station enhanced operator assigned to C Battery, 5th Battalion, 4th Air Defense Artillery Regiment checks and secures cables on the Patriot Launching Station. (SFC Jason Epperson/10th AAMDC)

on. It's a challenge, but our leaders and Soldiers are adapting and finding ways to succeed."

It wasn't just the Air Defenders training on their Patriot and SHORAD weapons systems; the maintainers also had their own set of distinctive challenges they overcame.

"During COVID-19, while conducting services on equipment, you have to have people pass tools without touching or getting too close and it gets really hot when you are carrying heavy parts while wearing all your personal protective equipment," said PVT Nicholas Pruitt, a mechanic assigned to Delta Company, 5-4th ADA. "Also, with less people available at all times to help with services so it takes longer, but we have kept up."

Once travel restrictions were loosened, Brady seized the opportunity to conduct leadership engagements in Baumholder, Germany, with the 5-7th ADA, and in Ansbach, Germany, with 5-4th ADA.

"Key leader engagements (KLEs) are important because they allow key leaders to get direct feedback from their formations and emphasize their priorities," said CPT Andrew Defabio, commander, Charlie Battery, 5-7th ADA. "KLEs offer junior leaders and Soldiers opportunities to brief senior leaders and gain perspective from an operational or strategic level."

During the leadership engagement to Ansbach, 5-4th ADA checked its ability to conduct a "drive thru" COVID-19 testing of all Soldiers that departed to Latvia for the joint SHORAD live-fire exercise – Tobruq Arrows.

"It was a privilege to be able to showcase 5-4th's readiness capabilities with the COVID surveillance testing for BG Brady," said SGT Benjamin Kroeger, Headquarters, Headquarters Battery, 5-4th ADA. "We have been working hard to adapt and overcome the constant changes during this pandemic. I am proud to be a part of one of the only units in U.S. Army Europe continuing to actively train

with the upcoming Tobruq Arrows."

"It was our Soldiers and our junior leaders that proved critical in getting us through this," Brady said. "We are also going to take it to the next level as we move to the summer months as we go back to executing our most critical joint and combined air and missile defense exercises in support of U.S. Army Europe, European Command and NATO."

The 10th AAMDC will be ramping up operations to prepare for and execute several joint and combined air and missile defense missions in the coming months including; Tobruq Arrows, Tobruq Legacy and Astral Knight.

CPT Rachel Skalisky, from Rough and Ready, Calif., commissioned as an Air Defense Artillery officer, with a Bachelors of Arts in Psychology from Texas A&M in 2013, served with Alpha Battery, 4th Air Defense Artillery Regiment; 2nd Battalion, 43rd Air Defense Artillery Regiment; assigned as the 10th Army Air and Missile Defense Command Public Affairs Officer.

263rd Army Air and Missile Defense Command conducts after-action review for COVID-19 response efforts

CPT William “Ed” Duvall



U.S. Army National Guard Soldiers with the 263rd Army Air and Missile Defense Command (AAMDC), South Carolina National Guard, held an After Action Review (AAR), May 15, 2020, at the Anderson Readiness Center in Anderson, S.C. (CPT Ed. Duvall, 263rd AAMDC)

U.S. Army National Guard Soldiers assigned to the 263rd Army Air and Missile Defense Command, South Carolina National Guard, participated in an after-action review (AAR), May 15, 2020, at the Anderson Readiness Center in Anderson, S.C., evaluating the improves, sustains and lessons learned during their recent mobilization in response to the COVID-19 pandemic.

The Army conducts AARs to analyze a mission, reviewing what went well and what can be improved. This AAR analyzed the unit's response to the COVID-19 pandemic, something that has never been done before.

"How many of you have ever been involved in a national-level

mobilization to include 54 states and territories?" asked COL Stephen Walker, 263rd AAMDC operations officer. "This is hopefully a once in a lifetime, unique response for the National Guard."

The AAR analysis was divided into four phases: Mobilization (phase 0), Organize (phase 1), Execute (phase 2) and Redeploy (phase 3). Each phase having its own improves and sustains.

The World Health Organization declared a worldwide pandemic March 11, 2020, triggering the mobilization phase. The unit received its mobilization notification, published their annual training orders and began their transition to Title 10 (active duty) orders. During this phase, a significant sustain was

the first home station mobilization for a South Carolina National Guard unit.

"Right from the start there was some concern at upper levels about taking a primary unit out of the National Capital Region (NCR) mission for an unknown amount of time, and determine the risk," stated MG Timothy Sheriff, 263rd AAMDC commander. "We had proven what we could do during Vigilant Shield and now had to show we could do both the NCR mission and the COVID-19 response mission."

March 30, the Organize phase was initiated in response to being placed on active-duty orders. The tactical operations center (TOC) was fully operationally capable



During the AAR with South Carolina Army National Guard Soldiers, leaders discussed the improvements, sustains and lessons learned during the unit's response to COVID-19. (CPT Ed. Duvall, 263rd AAMDC)

and the transition to 24/7 operations in Anderson was initiated, as the U.S. Army North (ARNORTH) and internal battle rhythms were developed.

"When our higher (ARNORTH) began running 24/7 operations, we were ready," said LTC Sammy Butts, 263rd AAMDC TOC operations officer in charge.

April 6, the Execution phase kicked off with the first mission control elements (MCE) movement. Command of the Connecticut MCE was held by BG Frank Rice, 263rd AAMDC deputy commanding general, and the Massachusetts MCE was commanded by COL Richard A. Wholey, Jr., 263rd AAMDC chief of staff. These MCE's in Stamford, Conn., and Boston, Mass., provided command and control (C2) and joint reception staging onward movement and Integration for Urban Augmentation Medical Task Forces for the Federal Emergency Management Agency (FEMA) Region 1, while the 263rd AAMDC also conducted a

transfer of authority with 9th Air Force for C2 authority for FEMA Regions 3 and 4.

"My primary focus is the health and welfare of the team, and setting conditions for the arrival and effective employment of Urban Augmentation Medical Task Force teams," said Wholey.

April 26, began the unit's transition to Redeployment as MCE teams completed their required quarantines, equipment inventories and daily reporting wrap ups to ARNORTH. This phase allowed supply, personnel, legal and medical to close out operations in preparation of demobilization.

"One reason why this mission was a success was the posturing of the unit going into the mobilization," said 263rd AAMDC CSM Keith Phillips. "By having a high readiness status, you get to where you need to go."

The next phase for the unit is to complete the demobilization process. The 263rd AAMDC will have the opportunity to take the lessons

learned and apply them, helping tackle future missions they are tasked to complete and continue to serve the nation and South Carolina as "America's Shield."

CPT William "Ed" Duvall is a branch-qualified logistician and served as a platoon leader, executive officer and commander of the 1263rd Combat Support, Forward Support Company, Greer, S.C. He also served as the S-4 at the 2-263rd ADA Battalion before attending DINFOS. After completing DINFOS, he served three years as the public affairs officer for the 678th ADA Brigade while deploying with them to Germany in 2018. He joined the 263rd AAMDC in November 2019 providing coverage on Vigilant Shield and recently mobilizing with the unit in response to the COVID-19 pandemic.

Not your typical Top Notch

1LT Nicholas Culbert

For well over a decade, the four subordinate brigade headquarters of the 32nd Army Air and Missile Defense Command have continuously rotated responsibility of the *Top Notch* mission set. As the U.S. Army's Air Defense Artillery brigade for all of the United States Central Command, it is the mission of *Top Notch* to sustain U.S. Air and Missile Defense (AMD) forces

in order to protect critical assets across Southwest Asia. Most notably, the brigade's units counter tactical ballistic missiles, unmanned aerial vehicles (UAVs), cruise missiles and air-breathing threats like fighter aircraft or helicopters.

Across the air defense community, you'll hear the term "steady-state." Over the years,

the *Top Notch* mission in USCENTCOM, while critically important and well-executed, has become normalized, routine and conventional. In other words, units have become accustomed to ordinary mission sets and comfortable, known deployment locations. In September 2019, the 108th Air Defense Artillery Brigade headquarters remained on schedule to assume this mission that had been executed at an even tempo for many years.

However, on Sept. 14, 2019, just days before the arrival of the brigade headquarters to USCENTCOM, a coordinated attack was conducted on Saudi Arabia's Aramco oil facility in the eastern part of the kingdom. The attack, lasting 17 minutes, was perpetrated by over 18 unmanned aerial systems. After evidence collection and analysis, the United States, many European powers and the Saudi government blamed Iran for the attack. "Speaking to Reuters News, U.S. Special Envoy for Iran, Brian Hook, said that the U.S. Government's declassified evidence was further proof that Iran was behind the attack on the Saudis." "The UAVs flew into Saudi Arabia from the north, and the recovered debris is consistent with Iranian-produced materiel. As many nations have concluded, there are no plausible alternatives to Iranian responsibility," he said.¹ The Aramco attack caused a dramatic

Operating in an austere, expeditionary environment, a U.S. Patriot launching station provides vital asset defense and protection to U.S. forces. (SGT Christopher Gallagher/U.S. Army)



¹ Pamuk, Humeyra. "Exclusive: U.S. Probe of Saudi Oil Attack Shows It Came from North - Report." Reuters, Thomson Reuters, 20 Dec. 2019, www.reuters.com/article/us-saudi-aramco-attacks-iran-exclusive/exclusive-u-s-probe-of-saudi-oil-attack-shows-it-came-from-north-report-idUSKBN1YN299.



U.S. Army and Air Force personnel conduct strategic mobility operations for Air Defense equipment and personnel. (Courtesy photo/U.S. Air Force)

escalation in regional tensions and presented new challenges to U.S. and partner nation AMD forces, including rendering the concept of “steady-state” obsolete.

Not four weeks after the attack, COL Charles Matallana, commander of the 108th Air Defense Artillery, assumed the role of brigade commander for the *Top Notch* Brigade. Among his top priorities were the forced evolution of Air Defense Branch’s culture, its unit tactics, techniques and procedures (TTPs). The Air Defense Artillery needed to grow and rise to meet the challenges posed by shaping events like Aramco.

This command-driven momentum was critical to numerous units who, upon arrival to USCENTCOM, were quickly re-missioned to defend critical assets. Often times poised to assume scheduled missions at pre-planned locations, AMD forces have been forced to rapidly adapt and quickly relocate elsewhere. For context, this is no easy task. Each battery has hundreds of pieces of equipment. If you do the math, moving a battalion (around 500 Soldiers) as well as their equipment and supplies needed to sustain operation-

al needs is complex. To date, the *Top Notch* Brigade has overseen the movement of over 5,000 pieces of equipment and nearly 1,200 Soldiers.

Simultaneously occurring were a series of robust dialogues and in-depth analyses that spurred numerous changes across the theater. Most important were the refinement and implementation of new unit rules of engagement, air defense special instructions and defense designs. Through this full-force effort, Soldiers at all levels promptly reshaped the AMD posture, preparedness and lethality within Southwest Asia.

These newly developed AMD habits, forged as a result of command emphasis, helped prepare units for their mission today, and training tomorrow. Lethality analysis and refined mission practices centered on unit adaptability and expeditionary operations must be incorporated into future pre-deployment train-ups and continued while operationally deployed. The brigade’s success in combating emergent threat streams has direct correlations with exercises like the 32nd AAMDC’s Roving Sands, which stresses the impor-

tance of Air Defense units in support of large-scale ground combat operations. In the future, U.S. forces will face a near-peer threat that will strain conventional practices and force units to think critically in order to defeat air and missile threats. This includes rapid displacements, tactical movements and swiftly achieving initial operational capabilities. Through enhanced TTPs, the brigade continues to build upon this momentum and grow combat power across AMD formations.

At the senior leader level, aided by the 32nd AAMDC, the *Top Notch* Brigade engaged in an unprecedented level of theater security cooperation efforts, key leader engagements, partner nation reassurance, joint and allied exercises. These military-to-military relationships helped foster trust and learning amongst air forces and Air Defense units across the Middle East, ultimately strengthening the overall defense of the region and the Arabian Gulf.

These combined initiatives proved instrumental moving into 2020. On Dec. 27, 2019, a rocket attack in Kirkuk, Iraq, killed an American contractor and left several other U.S. personnel wounded.² This initiated a series of events that ultimately led to a U.S. airstrike which killed Qasem Soleimani, the Iranian Quds force commander. With regional tensions high, U.S. Air Defense preparedness became center-stage. Tensions peaked on Jan. 8 when Iran fired 16 ballistic missiles at two U.S. bases in Iraq.

Testifying in front of the House Armed Services Committee on March 10, 2020, the commander of USCENTCOM, GEN Kenneth McKenzie said “While the United States has Patriot units deployed across much of the Middle East, the Pentagon had not deployed such a system into Iraq as commanders believed U.S. troops in other countries in the region were more likely to be targeted for attack by Iran. Our [Air Defense]

² “US Attacks Iran-Backed Militia Bases in Iraq and Syria.” BBC News, BBC, 30 Dec. 2019, www.bbc.com/news/world-middle-east-50941693.



A Soldier with the 108th Air Defense Artillery “Spartan” Brigade conducts Patriot launching station drills while forward deployed in support of air and missile defense operations. (SGT Christopher Gallagher/U.S. Army)

presence sends a clear signal about our capabilities and our will to defend partners and U.S. national interests,” the general said. Bottom line and to the general’s point, no missiles were fired at any country hosting *Top Notch* forces. This is a testament to the strategic deterrence of *Top Notch* AMD and subordinate formations effectiveness in countering hostile action. In the face of escalatory measures, the brigade’s success counters the false narrative surrounding the ineffectiveness of U.S. Air Defense systems like Patriot.³

“Going forward, it is CENTCOM’s objective to posture forces in the region with the operational depth to achieve a consistent state of deterrence against Iran and be adaptable to future Iranian threats.”⁴ As a result of this purposeful agenda, Air Defense has

become the proverbial “main line of effort.” More than ever, AMD planners and units must adhere and practice the Air Defense employment guidelines and the six principles of Air Defense. Key considerations like overlapping fires, weighted coverage, defense-in-depth, mutual support, balanced fires and early engagement have shaped U.S. and coalition AMD initiatives to deter aggression and secure the region.

These plans are by no means limited to the Patriot weapon system. For the first time in over a decade, a robust complement of multiple weapon systems and sensors allow for truly integrated air and missile defense designs. This holistic approach to force protection allows for maximum detection and defense of U.S. personnel in deployed areas, astronomically

amplifying risk for potential adversaries who seek them harm. Furthermore, this mutual support and integration further flexes the adaptability of the individual Soldier and units. The end state of this combined effort is the preservation of the force and operational continuity for a myriad of units across the theater.

Our nation’s Air Defenders remain a highly specialized force. No one else can perform the mission that we do. Under the largest-ever *Top Notch* Brigade, the Soldiers of the Air Defense Artillery are living out our branch’s mission perhaps more than ever before. The total force relies on our contributions and expertise in order to focus on directed mission sets. To that end, the Soldiers of the *Top Notch* Brigade remain ready, lethal and vigilant to secure the skies and deter our nation’s foes.

1LT Nicholas Culbert is the brigade adjutant for the 108th ADA Spartan Brigade headquartered at Fort Bragg, N.C. Recently the brigade returned home from a rotation to the U.S. Central Command area of responsibility where it served as the tactical command element for all air defense operations in Southwest Asia. Culbert has authored a total of four articles in the Fires Bulletin and Air Defense Artillery Journal. He is happily married to his beautiful wife, Megan and they both live at Fort Bragg with their dog, Harper.

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Air Defense forces return to Bragg after year of heightened tensions and pandemic

CPT Brandon Nalley

Over the last few weeks, Soldiers of 1st Battalion, 7th Air Defense Artillery and 3rd Battalion, 4th Air Defense Artillery Regiment have returned to Fort Bragg, N.C., from a year in the Middle East.

In May and June of last year, both battalions deployed amidst heightened tensions in the region to support Operation Spartan Shield. Spartan Shield strengthens our defense relationships and builds partner capacity in the U.S. Central Command area of responsibility through key leader engagements, joint exercises, conferences, symposia and humanitarian assistance/disaster response planning.

The 1-7th ADA Soldiers, on a short-notice mission, deployed to rapidly reinforce air and missile defense assets already in the Mid-

dle East. One battery prepared and moved six C-5 and 10 C-17 aircrafts worth of personnel and equipment in less than a week with the rest of the battalion following soon after. This mission was part of the May 24, 2019, President Trump announcement that 1,500 troops in a “mostly protective” role would deploy amid threats in the region.

Soldiers from 3-4th ADAR deployed for what would typically be considered a conventional rotation to CENTCOM but found themselves moving into locations that hadn’t been occupied by U.S. Air and Missile Defense forces in nearly two decades. Units from 3-4th ADAR established air and missile defense sites in the Kingdom of Saudi Arabia after the Sept. 14, 2019, Aramco facility attacks in

order to protect U.S. forces, partners and interests.

“The Soldiers of 1-7th ADA and 3-4th ADAR have carried a heavy burden in the defense of U.S. forces and interests in the Middle East. We are incredibly proud of their performance in the face of adversity brought on by heightened tensions and a global pandemic,” said COL Charles Matallana, commander, 108th Air Defense Artillery Brigade.

Conditions continued to become more volatile after September, with rocket attacks on coalition forces in Iraq by militia groups resulting in deaths, the U.S. retaliatory strikes against militia facilities, the attack of the U.S. Embassy in Baghdad, the U.S. strike on Qasem Soleimani and the Jan. 8, 2020, Iranian ballistic missile attacks on coalition forces. These events were the catalyst for the deployment of additional units in the Immediate Response Force, operating on accelerated timelines similar to 1-7th ADA’s.

As the battalions’ deployments extended, in order to deter conflict escalation, the novel coronavirus pandemic impacted the world. Through the challenge COVID-19 brought, 1-7th ADA and 3-4th ADAR continued to provide premier air and missile defense as a stabilizing force in the area.

Upon return, Soldiers from the battalions were going through the necessary quarantine and reintegration processes before starting system modernization and continued training in preparation for future missions in defense of the Nation.

CPT Brandon Nalley is the public affairs officer for the 108th Air Defense Artillery Brigade, headquartered at Fort Bragg, N.C., and forward deployed to Southwest Asia in support of Operations Enduring Freedom and Spartan Shield.

PFC Lawrence Oneal (right), of D Battery, 1st Battalion, 7th Air Defense Artillery is recognized for his hard work and dedication to duty by CSM Brian Hester, the U.S. Army Central Senior Leader Advisor in the United States Central Command area of responsibility. (1LT Gabrielle Scibetta/U.S. Army)



Military m *Good versus great*

COL Todd Schmidt, Ph.D

Pick up a book on business and industry leadership or corporate strategy to augment military professional reading, and readers will find insightful lessons for military leaders at the personal, as well as the organizational level. Among the many messages and themes they offer, there is particular emphasis on the importance of team-building, vision and servant-leadership. Likewise, if one were to Google books on mentorship, they would find the same. There are countless books and articles with advice on mentoring, how to be a good mentor, how to find a mentor and the dynamics of healthy, fruitful and rewarding mentoring relationships.

Is mentorship still valued in the military? Ask a junior leader, and you'll most likely find mixed messages. They may demur. They will most likely express that they value, seek and long for a rewarding mentoring relationship. Navigating a military career can be intimidating, frustrating, mystifying

and complicated. The challenge they face, however, is the perplexing experiment of finding a great mentor.

Mentors can be much like a friend. They come in and out of a career, much like friends come in and out of life. We find and make friends for a reason, a season or a lifetime. Good friends are made and found for a reason or a season. Great friends last a lifetime. So it is with mentors.

In a survey of mentorship programs across all the military services, inquiring minds would find that the military takes a very formal, institutional large-scale approach to mentorship. Service differences center on the level of formality, the voluntary nature of the relationship and the hierarchy between the advisor and guide that is superior in rank, and the personal developmental needs of the mentee.

The Army Mentorship Program, formally developed and launched

in 2005, was unveiled with great intention. The website for the program was last updated 10 years ago. It is, as one would expect, clinical and prescriptive. The instructive Army Mentorship Handbook, published with the launch of the program, states that mentoring relationships should conform to the following principles:

1. Be between voluntary participants that are not in the same chain of command.
2. Be between participants that are "about two grades" of rank in degree of separation.
3. Be between participants in the same career field or occupational specialty.

The handbook goes on to provide additional instruction in a generic "frequently asked questions" format.

Is this how mentorship works in the real world? For "good" mentoring relationships: Maybe? For "great" mentoring relationships: No!

mentorship

The secret to understanding “great” mentoring is not well-hidden, but it is not well-publicized. It is easily found in the pages of military history. For Soldiers, all one must do is pick up a biography about Fox Conner, one of the greatest mentors in Army history. If reading about great military generals and admirals is not of interest, read a biography about a contemporary senior leader. Any of these tomes will reveal the secrets of great mentoring relationships to insightful readers.

Good mentors come in and out of a career for a reason or a season. They may be sought after for a specific reason, such as to assist in understanding how to prepare for promotion or an upcoming school. They may be sought after for a season, to guide, for example, a junior leader in the formative years as a non-commissioned, commissioned or warrant officer.

One would expect that good mentoring relationships involve coaching, teaching, feedback, ad-

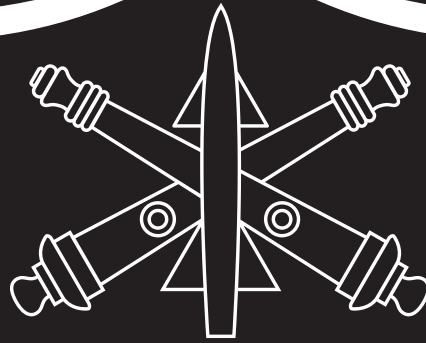
vice, encouragement and leadership by example. The secret to great mentoring relationships, however, is the establishment of a bond of friendship and trust. Great mentoring relationships involve more than acting as a counselor; great mentors are also great advocates.

For service members, much of a military career is about earning promotion and advancement based on merit. Soldiers earn their rank and increasing levels of responsibility by demonstrating their potential. However, as Soldiers advance through the ranks and into roles as organizational leaders, rank and position are earned not only by merit, but, more importantly, by reputation and the advocacy of mentors.

An email, phone call or letter of recommendation advancing a subordinate’s career leads to exceptional opportunities gained not just by merit alone, but with the advocacy of a senior leader. Skeptics need only look at some of our

most successful general officers and the career paths of their trusted subordinates. Observed closely, one finds that great leaders tend to be great mentors leaving great legacies of subordinates’ careers for which they advocated and helped to advance. The dividends of great mentoring relationships are rewarding in both directions for a lifetime.

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TRAINING THE SHIELD ARM

HOW U.S. ARMY AIR DEFENSE FORCES ARE EMBRACING FIELD
MANUAL 3-0 AND PREPARING FOR LARGE-SCALE GROUND COMBAT

COL Judson Gillett, MAJ Catalina Rosales, MAJ Brandon Thompson and MAJ Grady Stebbins

Editor's note: This article, which was originally printed in the *Military Review*, May-June 2020 edition, is reprinted because of its relevance to the Air Defense Artillery community.

It was early in the morning on March 5, 2019. The 108th Air Defense Artillery (ADA) Brigade staff, headquartered at Fort Bragg, N.C., assembled in their expeditionary main command post, now located on the MacGregor Range Training Complex at Fort Bliss, Texas. They were on day five of Roving Sands, an Air Defense training exercise set in a large-scale combat scenario. The staff knew that this day would be both crucial and stressful. Late the prior evening, their higher headquarters, II Corps, had set conditions for the transition into Phase IIIC and the corps' decisive operation: a three-brigade

attack to defeat an enemy armor brigade occupying a hasty defense. While the II Corps staff—or rather, a small contingent of 32nd Army Air and Missile Defense Command (AAMDC) Soldiers that replicated the corps staff for the scenario—had released the latest fragmentary order directing the attack, the 108th ADA Brigade staff was busy redesigning the Air Defense posture that would protect the corps' critical assets and enable the success of that decisive operation.

The brigade's Patriot and Terminal High Altitude Air Defense (THAAD) systems had already engaged dozens of simulated ballistic and cruise missiles in this exercise, but the hundreds of kilometers traveled across the rough terrain of the operational area were taking their toll on the sensitive radar

and launcher equipment. This day would be no different, as the corps maneuver fight would require at least a battalion's worth of Air Defense assets to displace and extend coverage to new critical assets—a complex move that could significantly interfere with the maintenance plan.

Adding to these tactical stressors, the 108th ADA Brigade staff also had to prepare input for the corps commander's update brief occurring later that morning, as well as participate in numerous internal and external working groups. The brigade's morning report to the corps staff was due soon. Fortunately, the staff had grown more comfortable with the corps' battle rhythm and formats over the previous five days, but consolidating, translating and

verifying data before reporting it to a maneuver headquarters still took hours.

The idea of tough and realistic training setting conditions for success on the battlefield is as old as the idea of military training itself. However, the stressors described above created a challenge that was unlike anything a U.S. Army Forces Command (FORSCOM) ADA brigade had encountered in training for years. The 108th ADA Brigade was among the first units to have a new focus for Air Defense training: support to large-scale combat operations (LSCO) on a highly contested modern battlefield.

To create change in the modern Army, leaders must first amend doctrine, adjust organizations, and then train those organizations to become comfortable with the new tasks they must perform, the conditions they must endure, and the standards they must meet. In October 2017, the U.S. Army Combined Arms Center published a major update to Field Manual (FM) 3-0, Operations, in order to reintroduce the LSCO framework at the division, corps and theater Army echelons. In the foreword to FM 3-0, LTG Michael D. Lundy clearly identifies that this doctrinal update must drive the Army's preparation for LSCO and the execution of such operations.¹ The 32nd AAMDC listened, and through research, planning and some debate, it developed an ambitious training strategy to prepare ADA units to meet that challenge. Of course, it learned many tough lessons along the way. The FORSCOM Air Defense enterprise is embracing the LSCO framework from FM 3-0.

Background

In the modern U.S. military, senior leaders primarily use Patriot and THAAD systems as operational and strategic assets in missions

with high visibility and sometimes direct political implications. However, this high-tempo operational and strategic alignment has not always been the norm for Air Defense forces. As recently as 1996, the Army had aligned an Air Defense brigade with each corps. Within the continental United States, the Army reserved only the 11th ADA Brigade, headquartered at Fort Bliss, Texas, for echelons-above-corps missions. The corps Air Defense brigades—the 108th ADA Brigade aligned with the XVIII Airborne Corps, the 69th ADA Brigade aligned with V Corps, the 35th ADA Brigade aligned with I Corps, and the 31st ADA Brigade aligned with III Corps—existed to provide a tactical corps commander the capability to defend critical points on the battlefield from an increasingly sophisticated and proliferate air threat.²

Due to concerns about standardization of Patriot forces, this alignment was short-lived. With the reactivation of the 32nd AAMDC in 1998, the Army consolidated all Air Defense brigades at Fort Bliss, Texas, where they could benefit from shared facilities and training areas as they worked toward standardized operations.³ This, of course, came at a cost to their previous tactical alignment. The consolidation at Fort Bliss, Texas, was also short-lived. A result of the 2005 base realignment and closure strategy, the 32nd AAMDC's Air Defense brigades received orders to relocate to new posts. In fact, the 35th Air Defense Artillery Brigade had relocated to Korea a year prior.⁴ This move had the potential to redevelop the corps Air Defense relationships; however, the Army had concurrently decided to reorganize its operational forces from divisions organically equipped for independent operations into BCTs. For better or worse, this step down in functional echelons served to

de-emphasize corps-level operations. This rapidly changing relationship with maneuver headquarters was not a pressing concern to the 32nd AAMDC or its brigades. In the meantime, FORSCOM ADA had started a new mission, which was proving to be very time-consuming.

In October 2006, the Department of Defense (DOD) ordered the deployment of a Patriot battalion headquarters and two firing units to Qatar in support of the Doha Asian Games.⁵ This deployment demonstrated a commitment to Qatar while serving to protect the American service members and materiel stationed forward at Al Udeid Air Base and Camp As Sayliyah. The Doha Asian Games concluded at the end of November 2006. Instead of retrograding the Air Defense battalion, the DOD issued a change of mission that extended the deployment to 12 months. In early 2007, an additional Patriot battalion headquarters and two firing units deployed to Kuwait, doubling the Air Defense posture within the U.S. Central Command (CENTCOM) area of responsibility. Over the next six years, FORSCOM increased its Patriot presence to three battalion headquarters and 11 firing units.⁶ Patriot launchers stayed in Qatar and Kuwait, and new Patriot units deployed to Bahrain, Jordan and the United Arab Emirates. By 2013, the 32nd AAMDC had a full brigade's worth of Air Defense deployed in this new area of operations. The deployed Patriot units occupied and improved tactical sites from which they could provide Air Defense to U.S. assets and interests along the Arabian Gulf. Slowly, these tactical sites were hardened into fixed positions.

The Arabian Gulf mission had become the primary tactical influence on an entire generation of Air Defense Soldiers and officers.

1 Michael D. Lundy, foreword to Field Manual (FM) 3-0, Operations (Washington, DC: U.S. Government Publishing Office [GPO], 2017).

2 John A. Hamilton, *Blazing Skies: Air Defense Artillery on Fort Bliss, 1940–2009* (Washington, DC: U.S. Government Printing Office, 2009), 290–91.

3 *Ibid.*, 292–93.

4 *Ibid.*, 330–32.

5 "Qatar Emiri Air Force (QEAF) Air and Missile Defense," GlobalSecurity.org, accessed 18 February 2020, <https://www.globalsecurity.org/military/world/gulf/qatar-air-force-bmd.htm>.

6 Gregory J. Brady, *The Army Needs More Patriots* (Carlisle, PA: U.S. Army War College, 2013), 4–5.

B Battery, 3-43 ADA Battalion, 11th ADA Brigade Soldiers establish their final area of operations before the conclusion of Roving Sands 2018, March 3, 2018. At this point in the exercise the Soldiers were moving together like a well oiled machine and were ready to defend their position in no time at all. (SFC Brian G. Rhodes/32d AAMDC)



Because of the mission requirements, Patriot units increasingly prioritized training their technical skills, referred to as air battle management, over the tactical skills required for supporting large-scale maneuver. This heavy focus on technical training continued to grow in earnest until 2018, when the DOD reduced its CENTCOM Patriot allocation down to eight firing units—a net reduction of a full battalion.⁷ The 32nd AAMDC support to the CENTCOM mission has remained essential to national security objectives; however, the global increase in regional-power competition demanded a new posture outlook for FORSCOM Air Defense forces. Moreover, FORSCOM Air Defense forces needed to adjust their training to a new operational construct: LSCO.

Roving Sands

With a reduction in the CENTCOM Air Defense mission and a renewed focus on training toward LSCO, the senior leadership of the 32nd AAMDC developed and implemented a strategy for modernizing the way the 32nd AAMDC trains. Central to this strategy is a yearly brigade-size field exercise designed around LSCO. In keeping with tradition, the 32nd AAMDC leaders named this exercise “Roving Sands” after a 1986–2005-era joint Air Defense exercise, which had ended with a shift in priorities to the high demands of the Global War on Terrorism. Besides the ambitious scale of the exercise, the modern Roving Sands has little in common with its predecessor.

At face value, Roving Sands provides the opportunity for an entire Air Defense brigade—from the brigade commander down to the newest Soldiers—the opportunity to execute individual and collective tasks within the LSCO framework. However, the existential

value of the exercise is as a change agent for all FORSCOM Air Defense training. As combat training centers provide a forcing function for corps, division and BCT commanders to adapt to Army combat maneuver and logistics changes, the modern Roving Sands exercise seeks to instill change in Air Defense training as commanders and leaders at every level train for success in the exercise, and by extension, large-scale combat execution.

When the 32nd AAMDC developed Roving Sands, it focused exercise design on three primary training objectives. First, create tactical proficiency in the Air Defense role during LSCO. To enable this kind of proficiency, the exercise controllers required the 108th ADA Brigade to defend a prioritized list of critical assets while simultaneously planning to adjust local defense postures for future phases of the operation. Exercise controllers also used time as a training stressor, providing final information on the locations and dimensions of future critical assets to the 108th ADA with a limited amount of time to plan, reconnoiter, move and occupy new tactical sites to support the adjusted defense.

The second training objective was to reinforce technical Air Defense skills. The exercise designers enabled this training objective by networking the participating Air Defense systems into Pelorus, a simulation device that allowed the operators to see and engage virtual enemy ballistic missiles, cruise missiles and fighter sorties that were integrated into the scenario.⁸

The third training objective was to develop tactical skill in security and movement control through the consolidation area. The training audience was required to practice field craft and secure move-

ments and assembly areas against Level I threats.⁹

Exercise designers created the tactical scenario for Roving Sands using Training Circular 7-101, Exercise Design; FM 3-0; and the Decisive Action Training Environment 3.0.¹⁰ In the Roving Sands road to war, a division tactical group of the opposing force attacked south across the international border of a NATO partner nation to seize key terrain and natural resources. A combined and joint coalition comprised of a U.S. Army corps, with two U.S. divisions and one United Kingdom division, conducted force flow and staging operations to attack north, defeat the enemy formation, and re-establish the international border. A corps operation order and a projected set of fragmentary orders would develop the scenario and provide the in-line adjustments to the corps’ critical-asset list to stimulate planning and execution in the 108th ADA Brigade. Exercise designers also created two different mission command nodes to enable execution of the exercise. The first node, exercise control, provided overall mission command of the exercise, oversight of the observer-coach/trainers (sourced from the 11th ADA Brigade, 31st ADA Brigade, and 69th ADA Brigade), and control over the simulation architecture and contents. The second node, the II Corps response cell (in the role as high command), was designed to serve as the direct mission command node for the 108th ADA Brigade; it issued orders, received reports and executed regular battle-rhythm events. Both of these mission command nodes were sourced from the 32nd AAMDC Headquarters personnel. Given the small size of the 32nd AAMDC staff—a division-level headquarters with one-third of a maneuver division’s manning—this

7 Gordon Lubold, “U.S. Pulling Some Missile Defense Systems Out of Middle East,” Wall Street Journal (website), 26 September 2018, accessed 18 February 2020, <https://www.wsj.com/articles/u-s-pulling-some-antiaircraft-and-missile-batteries-out-of-mideast-1537954204>.

8 “About Us,” Jessix, accessed 15 January 2020, <https://jessix.com/>.

9 Joint Publication 3-10, Joint Security Operations in Theater (Washington, DC: U.S. GPO, 25 July 2019), fig. I-1. There are three threat levels; Level I threats include agents, saboteurs, sympathizers, terrorists, and civil disturbances.

10 FM 3-0, Operations; Training Circular 7-101, Exercise Design (Washington, DC: U.S. Government Printing Office, November 2010); U.S. Army Training and Doctrine Command (TRADOC) G-2, Decisive Action Training Environment, ver. 3.0 (Fort Leavenworth, KS: ACE Threats Integration, July 2017), accessed 15 January 2020, https://wss.apan.org/3084/Decisive%20Action%20Training%20Environment/DATE_3.0.pdf.

aspect was challenging. However, dedicating personnel to serve as a simulated higher headquarters created authenticity for the training audience and prevented the blending of tactical and administrative functions.

From the 108th ADA Brigade's perspective, Roving Sands challenged the status quo and forced the staff to adjust to a new type of operation by working directly for a corps commander as an Air Defense brigade. Supporting a ground maneuver fight forced the brigade staff to think and plan more dynamically, especially as the critical-asset list remained situationally fluid to continue to achieve

the commander's objectives. This type of fight was a significant departure from the current ADA mission in CENTCOM, where locations of ADA assets remain largely static through an entire deployment. To gain and maintain the initiative during Roving Sands, the corps had to prioritize and protect key tactical assets such as forward area resupply points, divisional support areas and command posts. Complicating the problem, these assets moved regularly in support of the maneuver plan. These conditions compelled the ADA brigade, battalion and battery leaders to understand the maneuver and support plans; coordinate tactical

movements with the operational environment owners; and plan and resource external force protection assets based on mission, enemy, terrain, troops available, time and civilian considerations well in advance of their movements and missions.

The brigade planners' success centered on shifting the mindset from a mature theater of operations with well-established tactics, techniques and procedures, and rehearsed movements in accordance with a standing and well-understood operation plan, to an immature theater of operations in a contested environment. Contrary to a theater Air Defense

A Soldier from B Battery, 3rd ADA Battalion, 43rd Air Defense Artillery, 11th ADA Brigade mans an M2 during the Roving Sands 2018 exercise on March 3, 2018. (SFC Brian G. Rhodes/32d AAMDC)



mission, the 108th ADA Brigade entered Roving Sands as the senior ADA command in the corps. The brigade planners took an in-depth look at capabilities and limitations of the Patriot and THAAD weapon systems task-organized under their control, as well as the assets the corps commander directed them to defend. The commander and staff analyzed these capabilities and responsibilities against the complex threat set comprised of short-range ballistic missiles, fixed-wing and rotary-wing aircraft, cruise missiles and unmanned aircraft systems. To create a successful defense in a contested area, planners also had to carefully consider the location, disposition and composition

of enemy maneuver; distances of planned convoy movements; and sustainment capabilities in order to extend the ADA commander's operational reach. Finally, leaders and planners had to contend with strict movement timelines and resource constraints that result from the complexities of LSCO.

Executing Roving Sands also highlighted the challenge of communicating between a technically specialized branch and general maneuver forces. The ADA brigade staff had to translate its detailed internal tracking mechanisms and reports into standardized formats to enable shared understanding with the corps commander and staff. At first, this proved more difficult than anticipated. Air De-

fense planners and staff are accustomed to reporting directly to technical experts at a U.S. Air Force air operations center capable of understanding and interpreting the nuances of Air Defense data. During Roving Sands, the brigade commander and staff performed much of the interpretation of this data themselves to communicate effectively with their maneuver higher headquarters. Communication improved over time as the brigade staff became comfortable interacting with their corps counterparts. With experience, the staff developed systems that facilitated meaningful dialogue and accurate, timely and succinct reporting, which allowed the maneuver commander to make deci-





A B Battery, 3-43 ADA Battalion, 11th ADA Brigade Soldier ground guides a vehicle during the Roving Sands 2018 exercise, March 3, 2018. (SFC Brian G. Rhodes/32d AAMDC)

sions regarding the corps' Air Defense plan.

As the uppermost Air Defense echelon in the decisive-action operation, the brigade planners found themselves in a position to influence the process of selecting which assets they should defend. At the theater level, nominating the prioritization of a critical-asset list is a function of an AAMDC headquarters. Army Techniques Publication (ATP) 3-01.94, Army Air and Missile Defense Operations, describes this theater-level process in detail.¹¹ Doctrine does not clearly describe the process by which a tactical corps headquarters would prioritize assets for an assigned or attached Air Defense capability. Roving Sands tested this construct, requiring the ADA brigade to perform analysis and nomination of a prioritized corps commander's critical-asset list. This concept of corps critical and defended assets is sure to be controversial to doctrinal hard-liners; however, during LSCO in an immature theater, an ADA brigade staff

may need to perform this analysis in the absence of an AAMDC. Roving Sands pushed the 108th ADA Brigade planners well beyond their comfort zones, but they met the challenge by devising ways to provide asset input to their higher headquarters.

Roving Sands also provided the 108th ADA Brigade's subordinate battalions a significant opportunity to train on tactical operations. The high tempo of the battle forced leaders at the battery and battalion level to conduct rapid planning and simultaneous execution to stay abreast of the supported maneuver force. Patriot units, long used to execute movements based on unit availability and maintenance, learned that they must execute their moves in accordance with the corps plan or risk desynchronizing the corps scheme of maneuver. Junior leaders accustomed to improved tactical sites with external force protection had to balance conducting their primary Air Defense mission with simultaneously defending their perimeter

from enemy ground forces. These opportunities for tactical training are few and far between for many in the ADA community, but Roving Sands provided a unique opportunity for practicing these skills on a significantly larger scale.

Perhaps the most important lesson learned for commanders and planners was the critical role of logistics in enabling operational reach. Unit commanders quickly realized that Patriot units will not always be the priority for support in LSCO. For many leaders at the brigade, battalion and battery, Roving Sands was the first opportunity in their careers where they directly planned and operated with a combat sustainment support battalion. The last 13 to 15 years of static Air Defense operations have accustomed unit leaders to "tail-gate" logistics, whereby all necessary classes of supply are delivered to the customer at a fixed location. In a static mission, error in a logistics status report has minimal consequences. Commanders can request additional fuel, food or

¹¹ Appendix B, "Critical and Defended Asset Methodology," in Army Techniques Publication (ATP) 3-01.94, Army Air and Missile Defense Operations (Washington, DC: U.S. GPO, 2016).

medical supplies through local base support to correct the error. In Roving Sands, however, an inaccurate logistics status report potentially meant catastrophic mission failure. A unit's inability to accurately forecast requirements meant that resupply might not have been planned, emergency resupply was potentially unavailable, and critical shortages could possibly halt operations. It was a hard but valuable lesson learned that will remain with those leaders for years to come. From the brigade to the battery level, Roving Sands served as an opportunity for leaders to participate, often for the first time, in a maneuver-centric, LSCO exercise.

Takeaways and future application

In the final after-action report for the exercise, one theme was abundantly clear: Roving Sands provided a tremendous opportunity for re-energizing the skills particular to large-scale combat, but it also highlighted the need for renewed focus on training tactics at every echelon and further repetitions as an institution.

One major takeaway from Roving Sands was the need for clear command emphasis on training for LSCO across all echelons. To codify this within the FORSCOM Air Defense community, MG Clement Coward, the 32nd AAMDC commander, has published command training guidance identifying his expectation for training at echelon and the 32nd AAMDC strategy for future major training events such as Roving Sands. To aid ADA leaders, the 32nd AAMDC staff published this document with a summary of required individual and collective tasks that support large-scale combat at each echelon and a suggested long-range training schedule at the battal-

ion level that complements those tasks.

A second major takeaway from the exercise is the need to conduct an orderly integration of mission-focused training (such as preparing for a deployment) into the overall training plan for large-scale combat. It is likely that FORSCOM ADA units will maintain a high operational tempo of deployments for the foreseeable future. Like BCTs continuing to rotate through train, advise and assist missions, Air Defense brigades must balance current mission requirements with training for large-scale combat. Many (but not all) skills parallel.

A final takeaway from planning this exercise is the value of reading and applying new doctrine. Recent doctrinal updates include reference publications, which are highly readable and highly useful for learning and applying the Army's new operational construct. Exercise designers relied upon references such as FM 3-0, Operations; Army Doctrine Publication 3-37, Protection; FM 3-94, Theater Army, Corps, and Division Operations; Army Doctrine Reference Publication 5-0, The Operations Process; FM 6-0, Commander and Staff Organization and Operations; ATP 6-0.5, Command Post Organization and Operations; FM 7-0, Train to Win in a Complex World; and others.¹² The 32nd AAMDC planners could not have executed an exercise such as Roving Sands without that clear direction and guidance. Leaders who wish to train to the Army's new operational construct are recommended to start there.

Conclusion

In his September–October 2018 Military Review article, “Meeting the Challenge of Large-Scale Combat Operations Today and Tomorrow,” Lundy characterizes FM 3-0 as a “pivot point to steer the

Army toward both persistent competition below armed conflict and, when necessary, armed conflict against highly lethal and adaptive peer and near-peer enemies.”¹³ For the 32nd AAMDC, Roving Sands is the next turn in the road. Should armed conflict in a highly contested environment demand the services of the Air Defense, the 32nd AAMDC will be trained, ready, swift and sure.

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MAJ Brandon Thompson is an Air Defense officer serving as the executive officer for 3rd Battalion, 43rd ADA Regiment, 11th ADA Brigade. Thompson was the primary planner of Roving Sands 2019.

MAJ Grady Stebbins is a Field Artillery officer serving as the fire support officer for 3rd Armored Brigade Combat Team, 1st Armored Division. Stebbins designed the scenario for and assisted in the execution of Roving Sands 2019.

¹² FM 3-0, Operations; Army Doctrine Publication 3-37, Protection (Washington, DC: U.S. GPO, 2019); FM 3-94, Theater Army, Corps, and Division Operations (Washington, DC: U.S. GPO, 2014); Army Doctrine Reference Publication 5-0, The Operations Process (Washington, DC: U.S. Government Printing Office, 2012 [obsolete]); FM 6-0, Commander and Staff Organization and Operations (Washington, DC: U.S. GPO, 2014); ATP 6-0.5, Command Post Organization and Operations (Washington, DC: U.S. GPO, 2017); FM 7-0, Train to Win in a Complex World (Washington, DC: U.S. GPO, 2016).

¹³ Michael D. Lundy, “Meeting the Challenge of Large-Scale Combat Operations Today and Tomorrow,” Military Review 98, no. 5 (September–October 2018): 113.

Note: The following articles were written by students in the Air Defense Captains Career Course class Number 01-20. They were tasked to identify the biggest challenges facing the

future of Air Defense Artillery and to argue whether the U.S. Army should prioritize the advancement of high to medium altitude air defense (HIMAD) or short-range air defense (SHORAD)

systems. The authors come from varying backgrounds and respond to this question through different perspectives. – COL David Shank



Observer-coach/trainers (OC/T) with 1st Battalion, 346th Air Defense Artillery Regiment, conduct an initial assessment on Alpha and Bravo Battery, 1st Battalion, 265th Air Defense Artillery Regiment in Deland and Palatka, Fla. The OC/Ts were there to assess Avenger and Sentinel crews as they prepare to execute the European Deterrence Initiative (EDI) and National Capital Region-Integrated Air Defense Systems missions. (Courtesy photo/1-265th ADA)

The Future of Air Defense Artillery

CPT David Lara

The United States Army has placed such an emphasis on counterinsurgency operations in the past 19 years that it has altered almost the entirety of its fighting force to account for constant deployments to the Middle East. According to an article by Gary Sheftick with the Army News Service, “In the 1990s, every Army division had a SHORAD battalion to protect it. In 2017, none of the 10 active divisions had one.”

In order to account for this, the Air Defense community has employed new weapon systems such as the counter rocket artillery and mortar (C-RAM) for over a decade to find its role within this fight. Now that new threats are emerg-

ing across the globe and our adversaries continue to develop their capabilities, it is time for the ADA community to once again adjust its strategic focus to prepare for potential future conflict. This presents the question of what the ADA community should focus its efforts on and what specific challenges it will face as we move forward? With the way we have altered our force over the past two decades, the answer is quite clear. We must emphasize the reintroduction of short range air defense (SHORAD) into a prominent roll throughout the air defense and maneuver communities.

The Army has depleted its SHORAD capabilities during the

War on Terrorism due to us having the assurance of air superiority in the current fight. However, our adversaries have begun to develop a multitude of capabilities such as utilizing unmanned aerial systems (UAS) to conduct reconnaissance and probing operations. This has placed the military in the reactive position of having to grow SHORAD capabilities quickly because of this emerging threat. An example of this is the Army creating new weapon platforms such as Maneuver-SHORAD and training non-ADA Soldiers with Maneuver Stinger to mitigate the current capability gap. “So far, six brigades have sent 156 Soldiers through the course and the graduates have

been awarded the A5 additional skill identifier, or ASI. This means they are certified to operate the Stinger man-portable air defense systems missile launcher in two-man teams to defend their unit against enemy aircraft.”

This temporary solution however is unsustainable due to the training and readiness requirements already placed on brigade combat teams (BCT's). Therefore, we must begin to reintroduce organic air defense elements to BCT's as quickly as possible.

The reason we must begin to implement these quickly is because the issue remains unsolved by just placing units within these formations. There is currently a huge knowledge and experience gap within the ADA community of how to operate within maneuver units in every echelon. Therefore, we don't have enough leaders and Soldiers that could effectively fulfill their role because of the sheer lack of opportunities presented to them. With most of the active duty SHORAD personnel having only

experience conducting C-RAM operations for the past decade, there is an immediate need to produce personnel that understand their roles and responsibilities in supporting maneuver units. This is a critical knowledge gap that must be addressed in preliminary professional military education for Soldiers and officers alike. We must also begin to alter the emphasis on how SHORAD units are trained by having upper echelon leaders reach across the aisle to maneuver organizations and find ways to insert their units into training exercises that would mutually benefit each other.

Presenting our capabilities and training our own personnel also serves a dual purpose. While training our own units we also give maneuver commanders the ability to understand how to properly utilize our capabilities and develop relationships that make SHORAD the combat multiplier it is designed to be. This is important because the only ADA presence in maneuver units recently has been the Air De-

fense airspace management-brigade aviation element cell, which is limited in its ability to provide anything outside of airspace planning and synchronization. The Air Defense community must accept its responsibility to train and grow its own forces while also allowing the units it intends to support to fully understand their capabilities. Without properly executing this integration, we will fail as we move toward conducting multi-domain operations.

Growing the SHORAD community is currently identified as a point of emphasis for the Army. “The Army currently has 519 positions for Soldiers with the 14P Air and Missile Defense Crewmember military occupational specialty. That number is expected to quadruple over the next five years,” said SFC Arianna Cook, senior career advisor for 14Ps at the ADA School.

However, as we multiply our forces, we must ensure that we are affording Soldiers and leaders ample opportunities to gain experiences in both the schoolhouse and in the operational force so that they can gain both the trust and respect of the units they will eventually support. Ultimately, if we fail to address the knowledge and training gap that we have created over the past two decades we will fail to restore the proud SHORAD community back into the role it is designed to fulfill. Senior leaders must continue to support this initiative not only to bolster the Air Defense community, but also to increase the lethality of the Army as a whole.

CPT David Lara is an Air Defense Artillery officer currently assigned to 35th ADA Brigade in South Korea. His prior experience includes being an Avenger platoon leader in the 2nd Infantry Division in South Korea as well as a C-RAM platoon leader/battle captain at Bagram Airfield in Afghanistan with 5th Battalion, 5th ADA Battalion.

The South Carolina National Guard's 2nd Battalion, 263rd Air Defense Artillery Regiment, wrapped up preparation for two missions at White Sands Missile Range, N.M. The battalion spent the last year training for two distinct missions, one in the states, and one overseas. Helping the 2-263rd, by providing training and assistance were observer-coach/trainers from 1st Battalion, 346th Air Defense Artillery Regiment, 188th Infantry Brigade.



Future challenges for Air Defense

CPT Joshua H. Fergel

For the last 18 years, the United States has been training and deploying troops to fight a counter-insurgency threat. In both the wars in Iraq and Afghanistan, the U.S. has maintained air supremacy and has been technologically unmatched. The rise of Russia and China has presented a new challenge that the U.S. has not faced since the end of the Cold War. The U.S. is no longer an uncontested super-power on the global stage and must prepare its military force to face a near-peer threat. The Army Air and Missile Defense Vision 2028 states that “the future operating environment is characterized by increasingly complex threats, sustained operational tempo, limited resources and the ability of great power competitors to contest U.S. forces in all domains.” (Army Air and Missile Defense 2028, 2019). This environment sets conditions for numerous challenges for future high to medium air defense (HIMAD) forces. The three primary future challenges facing Air Defense forces is joint integration efforts, operating in an electromagnetically denied/degraded environment and enemy hypersonic missiles. These issues compel the U.S. to prioritize the advancement of HIMAD capabilities in order to ensure air superiority in future conflicts.

To provide a tiered system of protection, the U.S. has developed numerous independent Air Defense systems to counter different threats. The issue currently facing the U.S. is the integration of these systems to effectively coordinate fires. When emplacing an Air Defense system in a new location, often the greatest challenge is the integration into the theater’s data communication networks. Currently, fire units are supported by a warrant officer (140A: command and control systems integrator) in order to assist in system integration, but this MOS is under-

strength and tasked with solving an increasingly complex problem set. The current solution for this problem is the Integrated Air and Missile Defense Battle Command System (IBCS). The challenge facing IBCS is inherent with the Army acquisition process. The Army acquisition model typically takes 15-25 years to go from conception to being fielded to the operational force. The flaw with this process is that the threat may evolve faster than our defense systems, and IBCS may be outdated before it is fully fielded. Even if the implementation of IBCS is successful, it faces a threat that has been underutilized in past conflicts.

One of the best capabilities of our near-peer adversaries is their ability to deny our use of the electromagnetic spectrum. Our current Air Defense systems rely on the electromagnetic spectrum for all tasks from emplacement of the system to the guidance of an interceptor in-flight to destroying a threat. The enemy has numerous jamming capabilities to affect our radars, our satellite communications and our GPS capabilities. Air and missile defense systems are currently only equipped to negate less-advanced jamming systems. Defeating the enemy’s jamming systems would involve a multi-domain effort that takes time that is not available with incoming ballistic missiles.

In the ideal battlefield where IBCS is functional and enemy jamming has been eliminated, future Air Defense systems will still be challenged by enemy hypersonic missile capabilities. Hypersonic missiles do not follow the ballistic trajectory that U.S. Air Defense systems are designed to defeat. Additionally, hypersonic missiles have maneuvering capabilities to completely change their course of direction. Not only does the speed of travel present an issue to our current defense systems, but their

maneuverability makes predicting the impact point almost impossible. Defense against these systems requires a tiered-defense across the land, air, sea, space and cyber domains. Deterrence against hypersonic missiles relies on left-of-launch operations to deny the enemy the opportunity to use these weapons. If left-of-launch operations are unsuccessful, future air and missile defense systems need to be designed with enemy hypersonic missile capabilities in mind. This gap in capability is a daunting task that the future of Air Defense will need to solve.

HIMAD needs to be the primary focus of Air Defense in order to ensure air superiority in future conflicts against near-peer threats. The success of land forces relies first on air superiority in order to allow for maneuverability on the battlefield, and this will only be accomplished through the defense against emerging enemy air and missile technologies. U.S. Army HIMAD capabilities are tasked with defeating an increasingly complex threat set, and a primary focus on the advancement of HIMAD systems is necessary to defeat them.

CPT Josh Fergel commissioned in 2016 through North Dakota State University Army ROTC. Upon completion of his initial training, he was assigned to Alpha Battery, 4th Air Defense Artillery Regiment, Terminal High Altitude Area Defense (THAAD), 11th ADA Brigade at Fort Bliss, Texas. Following the end of A-4th ADA’s mission to the Republic of Korea, Fergel served as the 11th ADA Brigade’s ADA fire control officer in charge (OIC) and the THAAD operations OIC. Fergel is a recent graduate of the Captains Career Course and has been assigned to Headquarters and Headquarters Battery, 35th ADA Brigade in the Republic of Korea.

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ADA Master Gunners

Historic traditions and future significance

SFC Aaron M. Smith

The Air Defense Artillery (ADA) branch needs more non-commissioned officers to develop a technical expertise and implement effective training management as diverse weapon systems continue to evolve and transform it into one of the fastest-growing branches of the military. Master gunners have long been recognized as the senior NCO that brings gunnery (the art of employing fire power) to a level of mastery (superior skills and knowledge). With ADA's future introducing new weapon systems like maneuver short-range air defense system (M-SHORAD) Strykers, indirect fire protection capability (IFPC) platforms like Iron Dome, and directed energy lasers into Army Integrated Air and Missile Defense (AIAMD) networks, success of future ADA units will hinge on the expertise of master gunners to employ the expanding arsenal that already includes Patriot, Avenger, counter rocket, artillery, and mortar (C-RAM), terminal high altitude area defense (THAAD) and Stinger.

As ADA's expanding arsenal combines with joint, interagency, intergovernmental, multinational operations as the Army's second most overseas-operating branch, master gunners need to advise commanders on the employment of Air and Missile Defense weapons across the world while training and developing the next generation of Air Defenders. Avenger Master Gunner, Patriot Master Gunner and Mission Command Digital Master Gunner are all courses that produce a tactical proficiency steeped in a rich tradition. The identity of a master gunner existed long before America with a clear emphasis on excellence, and its effectiveness will remain pivotal to ADA's future.



(Courtesy photo)

The original master gunner

Almost 400 years ago, Samuel Sharpe was appointed master gunner in the Massachusetts Bay Colony in 1629 becoming the first master gunner on the continent (Grodzinski, 2006). When Great Britain gave the colony "five pieces of ordnance and a great quantity of other arms and great shot," Samuel Sharpe became the "Master Gunner of Our Ordinance" to maintain, arm and prepare munitions. A decade later, his Massachusetts cohort was formally established as the Ancient and Honorable Artillery Company of Boston, one of the oldest military units in North America (Quail, 2011). The notable title of master gunner predates colonial days though and traces its lineage to medieval Europe, when British artillerymen introduced gun powder and cannons to complement their knights on the battlefield. The master gunner had command of the cannons and was critical to the evolution of warfare. Cannons eventually supported the coastal defense of castles and tow-

ers that were strategically armed with artillery along the shoreline to thwart invading navies. The transition of cannons from fixed-ground targets toward mobile vessels off the coast expedited the need for weapon system mastery and a new level of expertise to lead the transformation and employment of cutting edge weaponry (Maurice-Jones 2012).

The first recorded mention of master gunner occurred in 1386 when the English Army commanded by King Edward III crossed the English Channel to invade the French port castle of Calais. With the master gunner's invaluable employment of cannons during the Siege of Calais, the English seized the port and maintained it for two centuries, giving them a main landing point onto the European continent (Maurice-Jones, 2012).

By the mid-1400s, the prominent post of "Master Gunner of England" was established to serve "as the principle technical expert to the Crown in all aspects of artillery" (Stewart, 1996). This pres-

The Sidge of Calais (1346-7) by Jean de Wavrin. (Courtesy illustration)



tigious position recorded all gunners in the kingdom, tracked their certification and proficiency levels, and oversaw the training and employment of new weapon systems from ranges near the Tower of London.

Centuries later as the American colonies' Continental Army began developing its own image that would evolve into the greatest fighting force on earth, many characteristics from European militaries were transplanted to American formations – including the value of having master gunner with the expertise to maintain and employ an arsenal.

During the American Revolution, many of these master gunners proved to be that combat multiplier enabling military success. In April of 1775 for instance, Benoni Sanders enlisted as a private with the Connecticut Regiment and saw his first combat at the Battle of Bunker Hill. The next year, he became a sergeant in COL Henry Knox's Massachusetts Regiment as the historic leader secured 60-tons of cannons that traveled 300 miles following the capture Fort Ticonderoga; this arsenal was destined to help fortify GEN George Washington's camps after the Seize of Boston (Drake, 2015).

When several British naval vessels amassed in Canada for

an expected attack, SGT Sanders transferred up North and became master gunner at a salary of \$13 per month, roughly the same pay as a lieutenant (Simmons & Con-cannon, n.d.). Then serving under GEN Benedict Arnold's command, Sanders' expertise employing cannons helped several American ships maneuver around the largest British fleet to ever sail Lake Champlain (Arnold, 1935), a valuable body of water located between modern day New York State, Vermont and Canada.

While the colonists were successful in stalling the British advancement until the harsh winter passed (a delay that enabled the colonists to regroup), Sanders tragically lost an arm on Oct. 11, 1776, at the Battle of Valcour Bay when the larger British fleet took control of the lake (Seelinger, 2014). Sanders became one of the first master gunners wounded in combat in America, but did so while stopping a planned enemy attack on New York and Boston. The dedicated Army NCO recovered and demonstrated the expertise a master gunner could provide. Despite having only one arm, he continued to serve until 1781 when the victory at the Battle of Yorktown proved American independence was imminent leading to the end of the Revolutionary War.

The Battle of Valcour Island by Ernie Haas. (Courtesy illustration)



Armor Master Gunner Badge. (Courtesy photo)

The modern Master Gunner Courses

Exactly two centuries after that Battle of Yorktown, the value of master gunner was still at the forefront of training and employing weapon systems. In 1981, the first Bradley Master Gunner Course was designed at Fort Benning to bolster mechanized infantry tactics. Named after General of the Army Omar Bradley who had recently passed away, the M1 Bradley was fielded in 1981, and within two years the need for specific training to establish gunnery and weapon system mastery arose (Infantry Magazine, 2006).

The Infantry's new course was modeled after the successful Armor master gunner course. Army Chief of Staff GEN Creighton Abrams famously served during World War II with the 37th Armored Regiment that was victorious at the Battle of the Bulge (Krebs, 1974). Later as chief of staff during the height of the Vietnam War, the famous tanker wanted to improve gunnery across his formations. GEN Abrams ordered the Armor School to study the best ways to improve proficiency and readiness within the Armor branch. The overwhelming response from commanders in the field was that they needed someone with consummate knowledge of their weap-

ons to develop proper training and employment. The first Armor Master Gunner Course graduated 12 NCOs on Dec. 18, 1975 (Knights, n.d.). The Maneuver Center of Excellence at Fort Benning now hosts the Master Gunner-M1/M1A1 Tank Course, M1A2 SEP Master Gunner Course, Stryker Master Gunner Course, and the Infantry Fighting Vehicle Master Gunner Course.

While the job of every NCO is to be tactically and technically proficient as they train and lead Soldiers, a commander's need for a direct advisor with an expertise and mastery of gunnery goes above and beyond ordinary NCO business. Similar to the need for every NCO to be proficient in Physical Readiness Training, there is an expanded need for some to be master fitness trainers in order to develop training plans that expand proficiency.

The original badge and rank

Well before these modern Master Gunner Courses started, the Army's highest qualified Soldiers earned the master gunner marksmanship badge. General Orders Number 94 was issued on June 26, 1903, to establish a Master Gunner Badge which was awarded for the first time to those who "became qualified at the highest standard" at the Artillery School in Fort Monroe, Va. (Emerson, 2004). Two years prior, all artillery units in the Army consolidated into the Artillery Corps and fell within ei-

The original Master Gunner Badge (left) and rank (right). Courtesy photos



ther the Field Artillery or Coast Artillery subdivisions. Only the most proficient artillery gunners earned this new marksmanship badge featuring crossed cannons with an artillery shell leading into 13 stars.

Originally, the marksmanship badge's availability was extremely limited, with only 42 master gunners in the Army allowed to wear it at one time (Emerson, 2004). As the Coast Artillery's need increased for advanced technology skillsets to combat mobile targets, Congress created the official rank (grade) of master gunner in 1903, authorizing the 42 senior NCOs with the highest proficiency on their weapon systems to attain the new rank.

The Coast Artillery, organized different than any other branch, did not have a battalion-brigade structure but instead was organized by defended harbors. Because of this, the rank of master gunner was one of the highest ranking Coast Artillery grades out of the 24 total enlisted ranks in the branch (Berhow, n.d.). These senior NCOs assigned to one of the key billets sported the master gunner rank insignia on their sleeves, bearing an artillery shell and star instead of chevrons and rockers like other NCO ranks. These 42 master gunners received a \$40 salary per month, compared to a second class gunner (which later became private) who only received \$1 a month in 1907 (Emerson, 2004).

By 1920 however, the Army decided to consolidate and standardize its rank structure that was unique and complicated for each individual branch (Perrenot, 2011). The rank of master gunner in the Coast Artillery Corps was then merged into master sergeant, the highest enlisted rank at the time (sergeant major was not available in 1920). The identification of master gunners on Army uniforms then disappeared for nearly 100 years. Nearly a century after disappearing, a Master Gunner Identification Badge was reintroduced on May 8, 2019, to signify the im-

portance of master gunners across the Army (MILPER 19-144). While the official master gunner rank and marksmanship badge both went away a century ago, the tradition of training master gunners as subject matter experts would continue to evolve.

The original course – ADA's ancestors

For the top NCOs to be considered a master gunner back then, General Orders Number 181 issued by the War Department in 1906 established the School for Master Gunner as part of the Artillery School at Fort Monroe (U.S. War Dept., 1906). NCOs in the school were taken away from their units for an entire grueling year "to receive instruction to qualify them for the highest grade of work required of the artillery Soldier." They were trained on all of the various weapon systems in the Field and Coastal Artillery arsenal, not just a single weapon system like Patriot or Avenger master gunners.

When Field Artillery CPT Brooke Payne and Coast Artillery Corps SGT William Hill instructed the first year-long Master Gunner Course in 1906, 21 NCOs attended the class while only eight received certificates of proficiency (U.S. War Dept., 1906). The demanding level of mastery required to complete the course remains consistent with the strenuous graduation rates of the modern Master Gunner Courses of today.

The following year in 1907, Congress split the Field Artillery and Coast Artillery into completely separate branches. The old Artillery School at Fort Monroe then became the new Coastal Artillery School (McKenney, 1985) and the Field Artillery headquarters relocated to Fort Sill, Okla. All 42 master gunner positions in the Army were then allocated solely to the Coastal Artillery Corps (Emerson, 2004) where the Army's Master Gunner Course refocused its training.



A U.S. Army recruiting poster featuring the Coast Artillery Corps. (Courtesy illustration)

The now obsolete Coastal Artillery Corps, like every Army branch, played a major role in World War I and World War II. As new enemy capabilities emerged, so did the Army's ability to counter them. When enemy aircraft began plaguing American forces from above, the experts within Coastal Artillery were the logical answer for engaging this emerging airborne threat (Sawicki, 1991). Coastal Artillery master gunners had previous experience spotting long-range targets and engaging maneuverable threats in the water, so their master gunners quickly figured how to adjust fire and position their cannons upright in order to engage planes in the sky and protect forces on the ground. With advanced scientific training in "the logarithms and trigonometric functions" that can calculate the movements and trajectory of an enemy (Artillery Notes, 1908), they were most suitable to lead the transition toward the Anti-Aircraft Artillery (AAA) Command, a part of the Coast Artillery Corps.

In 1949, the Anti-Aircraft Artillery Master Gunner Course expanded on lessons learned from

the Second World War and spent 22 weeks training the highest caliber of NCOs on intricate topics like airplane trigonometry, azimuth determination, astronomical computations, meteorological influences and gunnery tactics for light and heavy cannons, as well as spotting and identifying enemy aircraft (AAA, 1949). These experts trained in the Army's only Master Gunner school could employ each of the weapon systems in the AAA arsenal.

That need for subject matter experts within AAA who could employ spotlights to see aircraft in the sky and destroy airborne threats would eventually evolve into an expertise with the Air Defense Artillery Branch (created in 1968) to identify and engage fighter jets, attack helicopters, ballistic missiles, cruise missiles, mortars, rockets, artillery and drones with the operation of complex air and missile defense weapon systems.

After lessons learned in Operation Iraqi Freedom established a clear need for tactical mastery, ADA implemented the Patriot Master Gunner Course to train mastery on its largest weapon system (Rodgers, 2008). Joining the

Avenger Master Gunner Course that had been modeled after the maneuver courses like Bradley Master Gunner a decade earlier, these Air Defense Master Gunner Courses are the direct descendants of the Army's original School for Master Gunners from the early 1900s, along with the Field Artillery Master Gunner Course, all offered at the Fires Center of Excellence at Fort Sill, Okla. These courses are all "characterized by a high level of technical competence and a detailed understanding of a projectile-producing system that aid a command in planning, resourcing, training and executing a gunnery program designed to enhance the combat effectiveness and lethality of a maneuver force" (Memorandum, 2018).

The ADA Master Gunner Courses have trained hundreds and hundreds of NCOs who utilize that training to continue a mastery of employing weapons across ADA formations. In June of 2011, the ADA schools trained the first female NCO to ever graduate from a Master Gunner Course in Army history (Heusdens, 2011). SSG Jessica Ray of the Florida National Guard completed the Avenger Master Gunner Course to bring the tactical insight and technical expertise to her Guard unit that employed Air Defense weapon systems in the National Capital Region; after the aerial attack on the Pentagon during 9/11 indicated a clear gap in Air Defense coverage inside the homeland, the National Guard was tasked with defending the country's most historic landmarks and strategic headquarters in Washington D.C.

Those national landmarks, and much of America's history, trace its roots through early colonial settlers, such as the Puritans who arrived on board the Mayflower in 1620 at Plymouth Rock, Mass. (Brown, 1920). Just a few years later in 1629, a young Samuel Sharpe, who helped fund that Mayflower voyage, was named the Master Gunner of Our Ordinance – beginning nearly four centuries of gunnery excellence on the continent.

His name still holds merit in the Army Ordnance Corps that recognizes “integrity, moral character and professional competence” by inducting Soldiers who exhibit these qualities into the Ordnance Order of Samuel Sharpe, which is a fraternal organization similar to the Air Defense Artillery’s and Field Artillery’s Order of Saint Barbara, the Infantry’s Order of Saint Maurice, Cavalry and Armor’s Order of Saint George, and the Quartermaster’s Order of Saint Martin (Quail, 2011). Unlike the patrons of those other honorable orders however, Samuel Sharpe was no saint, just an expert at his craft – the first master gunner in America (Ordnance, n.d.).

The new identification badge

That tradition of master gunners being the most tactically proficient NCOs is becoming fully realized in today’s Army. The first master gunners were noted in England 650 years ago; 400 years ago the continent saw its first master gunner in Samuel Sharpe; the Revolutionary War employed master gunners’ expertise 245 years ago as did future American conflicts; the Coastal Artillery, Anti-Aircraft Artillery and Air Defense Artillery trained its master gunners beginning 115 years ago; and roughly 100 years ago, the highest enlisted rank of master gunner disappeared.

To acknowledge both the historic traditions of master gunners and the importance a “Mike Gulf” can have to a commander, the Army’s Deputy Chief of Staff with G-1 proposed to bring back the honored symbolism with the Master Gunner Identification Badge (MGIB) in January 2018 (Memorandum, 2018). The MGIB is available for NCOs across the Army who have met the elevated requirements that a master gunner must achieve at one of the Combat Arms Branch’s schools (Myers,



The U.S. Army Master Gunner Badge. (Courtesy illustration)

2018). When describing a “heraldic item,” Army Regulation 670-1 discusses the wearing of badges “for identification purposes or for attaining a special skill of proficiency” (AR 670-1). This badge will identify “the technical expertise, support and advice that a master gunner provides the commander” (Memorandum, 2018).

The symbolism of the new MGIB will recognize these master gunner schools and their branch’s rich history:

- A laurel wreath represents victory of the maneuver force, a symbol of victory since ancient Greek mythology featured the god Apollo wearing a laurel wreath around his head.
- Inside the wreath, a sabre highlights the Armor branch, a symbol since 1851 adopted after the Civil War when the mounted cavalry achieved bat-

tlefield success swinging the curved, 36-inch-long, single-edged blade.

- The 1795 model Springfield musket honors the Infantry branch, a symbol of the first official model of musket originally built at the Springfield Armory, Mass.
- The crossed 19th-century-style cannon continues to symbolize the Field Artillery Branch just as it has since 1834, when individual field artilleryman wore the insignia on their cap.
- At the heart and center of the entire MGIB, the prominently displayed missile represents ADA. More than 50 years ago, ADA evolved from its predecessor, the Coast Artillery Corps, and transformed their insignia featuring crossed-cannons with a projectile in the center

to include ADA's technologically advanced missiles and Field Artillery's cannons.

The future

A century after the master gunner proficiency badge and rank were erased, this new Master Gunner Badge has now returned merging historic symbolism from these Combat Arms Branches, just as their capabilities have integrated to provide multi-domain and large-scale combat operations across the world. As ADA's capabilities also continue to integrate and evolve on the battlefield, Air Defense NCOs must acknowledge the importance of a Master Gunner School in providing the training to be the most effective NCO.

But graduating a master gunner course is not the destination – it is only a part of the journey. Mastering gunnery is not about completing a short but grueling course, receiving an additional skills identifier that certainly influences career progression options, or attaining a flashy identification badge or belt buckle for display purposes only. Similarly, excellence in gunnery should not be as-

sumed by achieving a good score or collective certification during a gunnery table's evaluation.

This works the same as physical training: a Soldier could display an "APFT Excellence" patch demonstrating proficiency during an evaluation, but if physical training is not a continual effort through a process of growth and commitment, that patch will surely be as absent as the master gunner rank has been for the past 100 years!

Instead, gunnery is the process of consistently employing weapon systems with an ability to effectively destroy targets, train Soldiers and develop professionals. Gunnery is not a single event or certification; gunnery is a process. NCOs seeking to become master gunners through the Avenger Master Gunner, Patriot Master Gunner, or Mission Command Digital Master Gunner Courses need to be aware of this as well. Mastery is a process of continually focusing and refocusing priorities to accomplish the goal, continually learning and striving for excellence (Senge, 1990). It requires NCOs to be technical and tactical experts, who can creatively adapt plans with the organization's de-

sired end state in mind, who can communicate effectively, who can train and develop others and who can provide a commander with sound advice to employ and deploy ADA's evolving capabilities.

Whether it's Patriot, Avenger, Air Defense and Airspace Management cells, Space and Missile Defense Command, THAAD, C-RAM or a future with AIAMD, M-SHORAD, IFPC, or directed energy lasers, ADA continues to evolve. Similar to the branch's rise from the Coast Artillery Corps and AAA, master gunners remain the critical experts in formations that contribute to an ADA unit's effectiveness.

SFC Aaron M. Smith is currently serving as the 14T senior career advisor with the Air Defense Artillery Proponent, Office of the Chief of Air Defense Artillery and previously served as senior small group leader at the Fires Center of Excellence Noncommissioned Officer Academy, platoon sergeant, evaluator and section chief. He graduated from Buffalo State College, where he met his wife Jennifer, and has two daughters. He is a Patriot Master Gunner.

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Manning the future force

LTC William Yund and SGM Jeremy R. Bennett

The Air Defense Artillery is in the midst of historical expansion. Faced with ever more capable and complex aerial threats, the Army has prioritized increasing the branch's capacity and capability. Army Air Defense is postured to receive the resources it needs to continue to compete successfully with our adversaries and prevail in large-scale combat operations. New materiel acquisition, new units, added structure and expanded mission sets will characterize the branch in the near term as ADA grows to meet emerging requirements. Operational tempo (OPTEMPO) will remain high while ADA units meet current demands and adapt to fill new roles supporting multi-domain operations (MDO). These conditions present both challenges and opportunities for Career Management Field (CMF) 14.

Growth

CMF14 personnel structure will expand from 8,441 authorizations this year to 9,876 in FY23 to meet growth requirements. The officer corps and warrant officer cohort will gain 119 and 32 authorizations respectively, while the enlisted force grows by another 1,284 spaces.

The majority of the approved growth supports the Army's investment in short-range air defense (SHORAD). These units will provide organic defense to maneuver divisions along with an improved defense of fixed and semi-fixed assets in the support and close areas of the battlefield. Per Army Structure Memorandums 20-24 and 22-26, the branch will field four Maneuver SHORAD (M-SHORAD) battalions equipped with a new Stryker-based weapon system by FY23. Per the 2019 National Defense Authorization Act the branch will add two Iron Dome

batteries to its inventory in FY21. Rounding out currently approved SHORAD growth, the Army will activate 4th Battalion, 60th Air Defense Artillery Regiment in FY21 as a personnel-only indirect fire protection capability (IFPC) battalion to alleviate OPTEMPO pressure on the branch's two existing IFPC battalions. Additionally, an additional ADA brigade headquarters organization was approved.

To support the growth of the first four M-SHORAD battalions, active component Air and Missile Defense (AMD) Crewmember (MOS 14P) authorizations will more than double, from 519 across the force this year to 1,313 in FY23. In the same timeframe, Battle Management System Operator (MOS 14G) authorizations climb 40 percent, from 1,087 today to 1,523. MOS 14Z authorizations increase from 291 to 330, representing a 13 percent rise.

Challenges

With significant overseas structure and higher OPTEMPO than the Army average, Air Defenders experience unique demands which stress the force. Feedback from transitioning Soldiers indicates that high OPTEMPO is one of the largest factors influencing Soldiers' decision to leave service. Today, approximately 59 percent of CMF14 Soldiers are stationed or deployed abroad. As a result of these overseas requirements, 35 percent of 14-series Soldiers are dwell restricted, compared to only 19 percent for the Army as a whole. In addition to deployments, 16 percent of the branch's enlisted force is assigned to a dependent-restricted location, further increasing stress on families.

Recent Air Defense unit deployments in response to Iranian aggression illustrate the continuing high demand for AMD forces

and capabilities around the world. Branch growth will help meet the demand and may facilitate improved retention of talented leaders in the long term. But it must be consistently managed over time to avoid traps that could exacerbate adverse systemic conditions for the branch. Risk to the mission must be balanced against a long-term risk to the force.

In the short term, inconsistent retention could induce growing pains at the unit level due to localized shortfalls in experienced NCO leadership. Through the end of May 2020, CMF14 trailed the Army retention average by more than five percent.

Setting conditions

In preparation for unprecedented growth, the branch has set conditions for a smooth transition. Initiatives have targeted recruiting, retention and increasing annual accession cohorts in anticipation of new unit activations.

Since 2017, CMF14 has benefited from increased enlistment incentives and "Quick Ship" bonuses to turn around negative accession trends. In FY15, for example, annual aggregate non-prior service accession for the branch fell as low as 74 percent of targets. By FY18, however, 14-series enlistees were offered higher bonuses than those provided to 142 of the Army's 159 accession specialties. In that year, ADA accessions exceeded its annual target by six percent.

Similarly, historically high reenlistment bonuses compensating Air Defenders for the unique demands placed on their career field have helped to mitigate attrition and increased in-service accessions. Since FY18, 406 Soldiers reenlisted from over strength occupational specialties into Air Defense.

Other levers have been pulled to improve ADA accessions. The Army and the branch have worked to increase the visibility of ADA MOS options in recruiting stations for prospective recruits and modernized promotional material. Accessions scores for MOS 14E were adjusted to increase the pool of available candidates. Credentialing and civilian certificate programs for CMF14 Soldiers were identified and advertised through the Army Credentialing Opportunities Online website (<https://www.cool.osd.mil/army/>) to increase the attractiveness of the career field to prospective recruits.

Additionally, the branch has benefitted from the use of Army Readiness Enhancement Account (REA) authorizations to posture CMF14 to meet near-term growth

requirements. These REA authorizations allow for immediate increases to Air Defense accessions in excess of targets based solely on current requirements. In other words, the branch is able to get a head start on growth by accessing and retaining more than 100 percent of its authorized manpower even though manning documents do not yet reflect all approved growth.

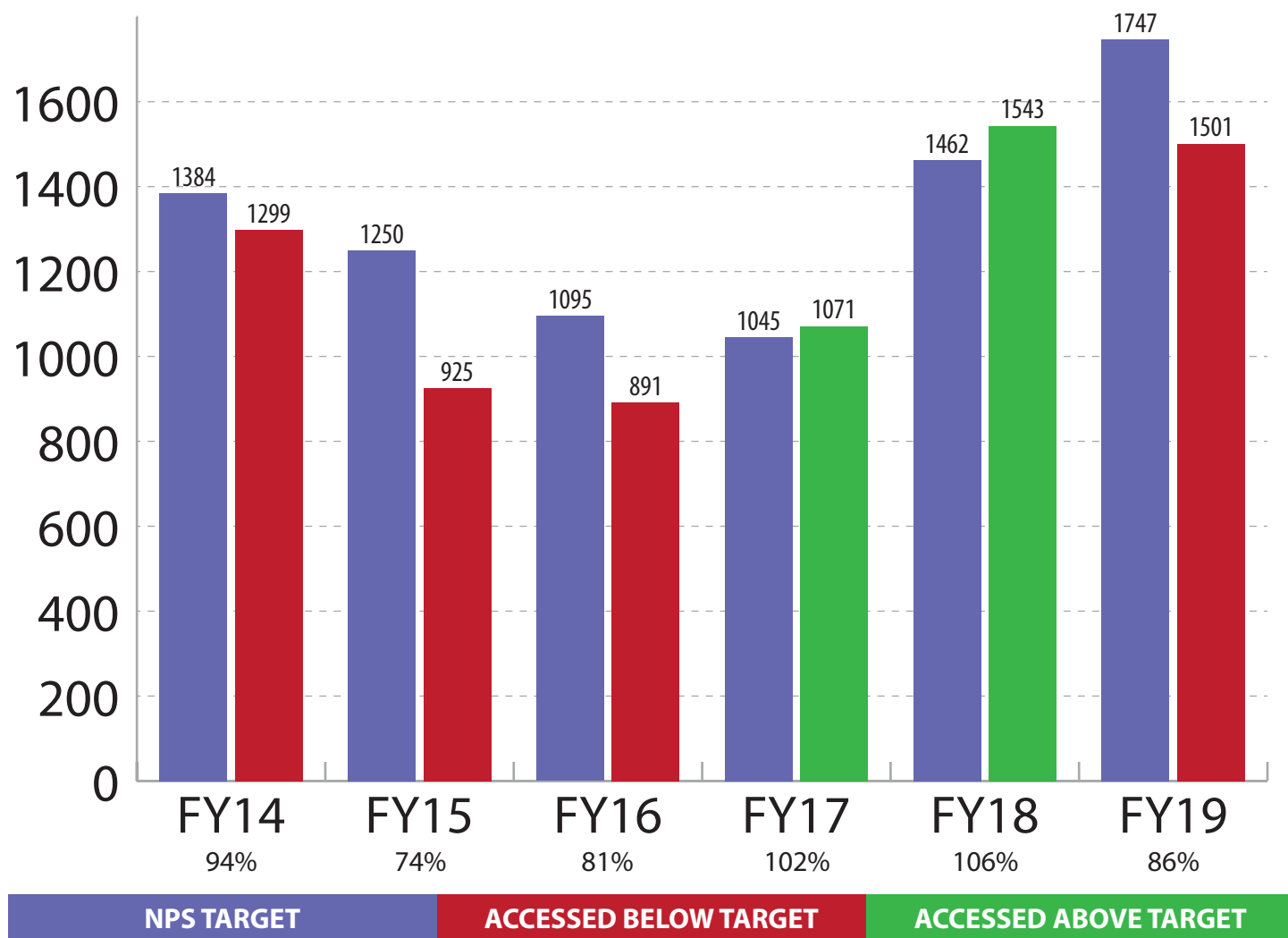
As a result, as of June 2020 the ADA force is manned at 114 percent enlisted strength (127 percent including all trainees, transients, holdees and students [TTHS]). Looking at the SHORAD occupational specialties in particular, both 14G and 14P are currently manned at 112 percent (133 percent and 137 percent respectively including TTHS).

Risks

Manning projections for the end of each fiscal year, however, reveal a less favorable personnel environment ahead in the near term. According to recent Human Resource Command's force alignment division modeling, notwithstanding the significant over-manning 14P currently enjoys aggregate projections for occupational specialty drop to 79 percent in FY23 as a result of the extraordinarily steep growth curve of this MOS in the next three years. NCO projections are even worse in many grades (see chart).

As structure rapidly increases, projections indicate skill levels two and four could drop as low as 58 percent of requirements on

Fig. 1. Non-prior service accessions.(Courtesy information)



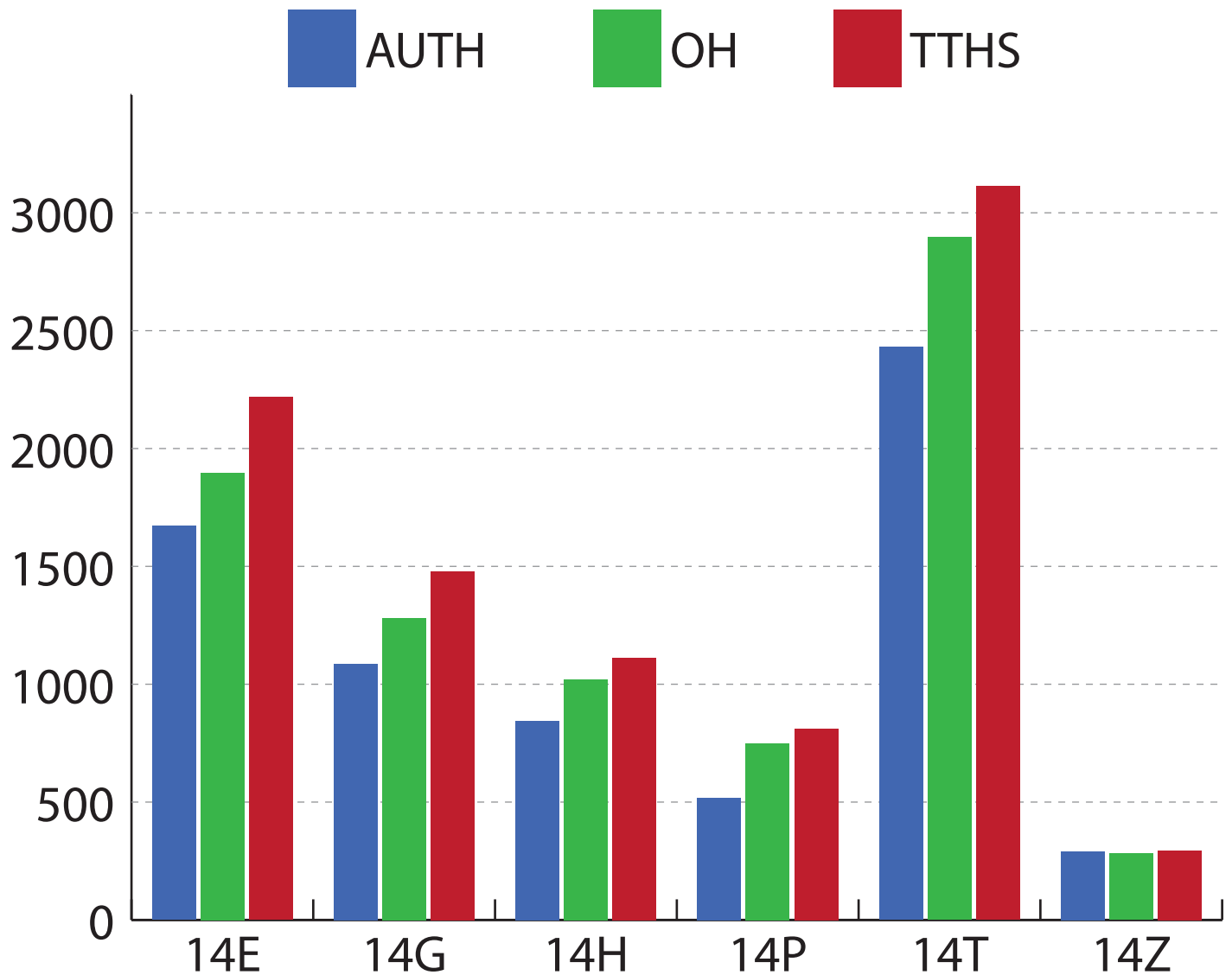


Fig. 2. MOS strength. (Courtesy information)

hand. Less than optimal leader-to-led ratios will impact many aspects of unit operations. Anything that negatively impacts future accessions, retention or promotions will compound the shortfall and increase stress on the force.

Timing new unit activations with an adequate pool of available manpower and careful stationing consideration will be critical in avoiding manning conditions that further stress the force and stimulate an exodus of talent from the ranks. Existing units must maintain the strength to train and meet operational requirements while maintaining Soldier resiliency within the ranks. Likewise, stationing decisions that imbalance the force by creating an excess of CMF14 assignments outside the

continental United States must be avoided to prevent additional family stress contributing to Soldiers' decisions to separate from service.

Opportunities

On the other hand, well-managed branch growth will contribute to a host of exciting possibilities for Air Defenders. Increased ADA presence within the maneuver divisions will provide more diverse assignment opportunity and greater mission variety. New weapon systems will afford Soldiers opportunities to work with the most recent technology fielded by the Army, including directed-energy weapons. Expanded mission sets justify additional functional training and

present broadening opportunities. All this is likely to have positive impacts on retention.

As ADA structure evolves to meet new mission sets and field new weapons systems, Air Defenders will enjoy opportunities to earn new additional skill identifiers (ASI) and participate in a greater variety of training courses. Air Defense has already requested the addition of the Ranger ASI for some 14P positions in Avenger units, for example. This requirement will go into effect in FY22. A similar effort for positions in the new M-SHORAD units is underway. Supported maneuver units will directly benefit from Air Defense leaders familiar with the planning and execution of maneuver operations, who share the

14P	FY20			FY21			FY22		
	AUTH	PROJ	PROJ %	AUTH	PROJ	PROJ %	AUTH	PROJ	PROJ %
SL1	250	494	198%	459	584	127%	583	567	97%
SL2	126	139	110%	208	151	73%	255	163	64%
SL3	89	93	104%	131	114	87%	158	135	85%
SL4	54	55	102%	80	62	78%	93	69	74%
TOTAL	519	781	150%	878	911	86%	1089	934	86%
	FY23			FY24					
	AUTH	PROJ	PROJ %	AUTH	PROJ	PROJ %			
SL1	719	627	87%	719	707	98%			
SL2	300	175	58%	300	187	62%			
SL3	187	156	83%	187	177	95%			
SL4	107	76	71%	107	83	78%			
TOTAL	1313	1034	79%	1313	1154	88%			

Projected 14P MOS manning during FY20–FY24. (Courtesy information)

same training experiences, tactical mindset and can seamlessly integrate as part of a cohesive team.

Likewise, Air Defense recently submitted a request to Training and Doctrine Command to make the 14P MOS eligible for the Stryker Leader Course, ensuring ADA leaders assigned to M-SHORAD battalions possess outstanding technical and tactical competencies required for mounted operations. Additionally, a Counter-Rocket Artillery and Mortar ASI is being created with a corresponding functional course to open this capability up to Soldiers outside the 14P MOS. A Stryker Master Gunner ASI and training program is also in the works.

Branch growth absent of new operational requirements could improve dwell ratios for our Soldiers and reduce stress on the force. This, along with increased variety in stationing and assignment opportunities, should contribute to Soldier and family satisfaction, with predictably positive effects on morale and retention. Promotion opportunities for eligible Soldiers are also likely to increase in the near term, encour-

aging talented individuals to stay longer in uniform.

Way ahead

Ensuring the continued health of the branch by setting conditions for strong accessions, career satisfaction and retention is imperative for Air Defense leaders.

The branch must continue to meet recruiting targets by pursuing innovative recruiting strategies and retaining talented leaders. Any accessions above 85 percent of annual targets will improve manning projections and safeguard future growth. Additionally, identifying and correcting structural imbalances to CMF14 grade plate standards which could impede promotion for our populations will be critical in decreasing Soldier wait time for promotion.

At the organizational level, regular participation in local Total Army Involvement Recruiting efforts assists Army recruiters to achieve their mission while helping to expand the pool of potential recruits who understand the dynamic opportunities available to them in Air Defense occupational specialties. Likewise, deliberate

leader development programs that prepare Soldiers for their earliest promotion opportunities will help build the team while safeguarding against future shortfalls in the NCO ranks.

At the institutional level, the branch continues to showcase Air Defense capabilities at high profile events to increase public awareness. Notably, the M-SHORAD Stryker vehicle prototype was prominently displayed to a national audience at the 2019 Army-Navy football game, during ESPN's Game Day program. Over the course of the broadcast, three live interviews highlighted to viewers the new ADA capability. Similarly, occupational specialty 14E was featured in Google's "Codes" for veterans commercial during Super Bowl LIII.

The Army's acquisition of Iron Dome offers an intriguing opportunity to experiment and incorporate lessons learned into an enduring IFPC personnel solution that may also contribute to increased vitality within CMF14. As an interim solution to the cruise missile threat, the two Iron Dome batteries do not come with addi-

The 14E MOS featured in Google's "Codes" commercial during Super Bowl LIII. (Courtesy photo)



tional personnel authorizations. Instead, they will be manned with existing personnel from 11th and 30th ADA Brigades. Occupational specialties testing and ultimately employing the weapon system include 14E, 14T and 14H, which traditionally operate high and medium altitude air defense (HIMAD) weapon systems. One advantage of manning Iron Dome with HIMAD Soldiers is to reduce pressure on 14P and 14G personnel already challenged by the rapid growth of new M-SHORAD battalions.

Employment similarities between Iron Dome and the HIMAD weapon systems should provide for a smooth transition from one system to the other for HIMAD Soldiers. On the other hand, IFPC and M-SHORAD systems are distinct and their roles non-interchangeable. Adding IFPC-specific critical tasks to 14P and 14G responsibilities might contribute to task saturation for those specialties, diminishing core competencies.

Giving HIMAD Soldiers the chance to operate with maneuver forces in the tactical support or close areas in support of MDO will appeal to their warrior instincts. It also increases branch manning flexibility and integration. Ultimately, the greater variety of experiences it affords these Air Defenders may predictably translate into increased job satisfaction and higher retention.

Conclusion

The rapid growth of the branch should excite Air Defenders everywhere. New weapons, more units and the key role ADA plays in penetrating and disintegrating the enemy during MDO should increase professional pride. A larger branch may also translate into reduced OPTEMPO, more varied opportunities for our Soldiers and greater job satisfaction. But the conditions created by rapid growth will also challenge the branch. In the near term urgent operational

requirements must be balanced against the long-term health of the force. The conditions created by rapid growth will demand more of unit leaders and steady, consistent institutional leadership. We are ready to meet the challenge.

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Air Defense Warrant Officer Culture Campaign

CW5 Mitchell Brown

It should come as no surprise to anyone in Air Defense that there is a shortage of warrant officers in all three specialties. There are multiple reasons for this, but the main one is our accessions program and the available population of eligible feeders. For the last 10 plus years, the accessions mission had a set requirement of 47 packets. During that same timeframe the warrant

officer authorizations increased from 389 to over 500 yet the accessions mission was never increased to match. To compound the issue, we have not made our accession goal since fiscal year 2013, and of those packets that were accessed in previous fiscal years, nearly one-third did not make it to the Warrant Officer Basic Course graduation.

With these three inhibitors it is easy to see why the branch is critically short in warrant officers. Unfortunately, there is no immediate repair to this damage. We now face a challenge requiring us to increase our annual accessions requirements by 50 percent indefinitely. Our culture must change to meet the needs of a growing and fast-paced branch.

		Accessions Mission											
MOS	MOS Title	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
140A	C2 SYS INT	15	15	15	15	15	15	15	15	15	20	20	23
140E	AMD SYS TAC/TECH	32	32	32	32	32	32	32	2	0	0	0	0
140K	AMD SYS Tactician	0	0	0	0	0	0	0	20	20	20	30	31
140L	AMD SYS Technician	0	0	0	0	0	0	0	12	12	12	18	22
Totals		47	47	47	47	47	47	47	49	47	52	68	76
		MTOE / TDA Authorizations											
MOS	MOS Title	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
140A	C2 SYS INT	135	136	144	145	145	147	151	150	159	168	169	181
140E	AMD SYS TAC/TECH	254	269	301	315	329	323	326	317	326	3	0	0
140K	AMD SYS Tactician	0	0	0	0	0	0	0	0	0	219	224	226
140L	AMD SYS Technician	0	0	0	0	0	0	0	0	0	110	117	119
Totals		389	405	445	460	474	470	477	467	485	500	510	526
		Total WO Assessed											
MOS	MOS Title	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21
140A	C2 SYS INT	15	15	10	12	14	14	15	14	15	20	20	
140E	AMD SYS TAC/TECH	19	25	32	37	32	32	25	2				
140K	AMD SYS Tactician								8	14	15	21	
140L	AMD SYS Technician								8	12	14	18	
Totals		34	40	42	49	46	46	40	32	41	49	59	

Shortages in the senior ranks can only be fixed in the long term (6-15 years) through fixing the junior warrant strengths now. Because it takes six years for a junior warrant to become a CW3, our plan is to graduate one-sixth of the junior warrant requirement every year. To make this graduation requirement we must over-access all three military occupation specialties (MOSs) by 30 percent to mitigate projected losses along the way. These calculations required us to raise our accession requirements in FY 20 to 68. This raised our requirements from 15 to 20 for 140A, from 20 to 30 for 140K, and from 12 to 18 for 140L. We are further raising our requirement to 76 (23/31/22) for FY 21 as the branch continues to grow. The challenge we all face together is how to accomplish this when we have not made our mission goals for seven years.

The culture campaign acknowledges accession challenges as a symptom of a larger problem. Our goal is to increase a qualified accessions population by increasing the technical and tactical development of the accessed population. Increased knowledge, capability, and performance leads to higher individual job satisfaction, in turn also making a higher percentage of the branch's population qualified for accession should they choose to pursue a career as a warrant officer. As each Soldier becomes more proficient at his or her profession and grows into a noncommissioned officer, he or she will be capable of training Soldiers to a higher standard. This will become a cyclic process with each generation of Soldiers improving the one behind them. The end state will be an increase in the lethality of the branch as a whole. A more knowledgeable pool of NCOs and Soldiers leads to a larger group of potential warrant officer candidates and an increased tactical or operational understanding in our platoon sergeants and first sergeants. To reach these goals, we realize there needs to be a change to the cultural mindset of the branch.

Vision

A cohort of engaged, satisfied leaders focused on the development of our Soldiers, the future of the branch, and the warrant officer mission.

Values: #1. Believe in a culture of development, rather than recruitment

We must embrace developmental principles to engage Soldiers early. This will increase their exposure to technical expertise of the warrant officer cohort and build a trusted and remembered image of the cohort within those Soldiers. Both the image and the preparation will

YOU WILL BE TRUSTED.

YOU WILL BE REMEMBERED.

COME MAKE A DIFFERENCE.

The most successful Warrant Officers are the ones who act as the unit Ombudsman -- for maintenance, logistics, personnel, and training. They **understand the standards, procedures, and processes**, and are tireless in pursuit of mission accomplishment.

The best Warrant officers are **part of a vast professional and personal network** that can be relied upon 24/7 to work issues. Their **advice, recommendations, and counsel is unvarnished**, and they are as at ease working with Privates and 2LT's as they are with CSMs and Generals.

—LTG Karbler

MESSAGE: Be trusted, be remembered, make a difference.

better support accessions later in that Soldier's career.

Think about the impactful people throughout your career. Are they those who made such an impact due to their actions? Or are they those who begged you to take your career in a given direction? The long-lasting impact we can make on our Soldiers by taking time to develop is monumental. Showing a specialist the profound capability of a technically skilled warrant officer is far more influential than trying to convince a staff sergeant to submit a warrant officer packet.

Upcoming changes to DA PAM 600-25 will identify key and developmental positions and desired knowledges, skills and behaviors for our enlisted ranks by MOS. As Soldiers and NCOs move into these technical key development positions, warrants must be involved in mentoring these NCOs to improve their technical knowledge and skills. As trainers, NCOs are teaching Soldiers the "how." The warrant officers are there to advise the NCOs, support their training and provide deeper levels of understanding the "why". By learning the "how" and the "why" we all gain a better understanding of our systems and the branch's mission. The ADA Branch CSM's incentive to create a system that values quality time, over quantity time, coupled with our developmental culture initiative, create the "perfect storm" that has the potential to take our branch to new heights.

In the past, we have always preached "find your replacement" and "every letter you write is tied to your reputation indefinitely." This cultural mindset must stop. Senior warrant officers must be actively developing NCOs and Soldiers to become potential candidates. In order for our ranks to grow and fix our shortages, every senior warrant officer must feed our population at least one candidate every one to two years. If they are not developing NCOs and Soldiers or helping them become candidates, they are not stewarding our profession and we will col-

lectively fail. To clarify this, there are approximately 100 senior warrant officers (W3-W5) that are in direct contact with our primary population daily. Each and every one of these 100 senior warrant officers must be actively developing Soldiers and NCOs at all times. If each one provided a prospective candidate every year, we would make our mission with an excess of packets and allow the board process to select the best of the best. We must all start developing today!

Value #2: Professionalism always

According to DA PAM 600-3 warrant officers are technical experts, combat leaders, trainers, advisors, innovative integrators of emerging technologies, dynamic teachers, confident warfighters and developers of specialized teams of Soldiers. We are the subject matter experts in our craft. We should be the unshakable, unbreakable pillars of experience within any organization. We should be the standards bearers and enforcers. No matter the situation, chief has probably seen it, done it, or knows someone that has. When everyone else is breaking under stress, chief should be there cool as a cucumber. He or she should have the answer to the problem. He or she should be enforcing standards and ensuring the unit is trained hard so it will be successful on its worst day.

While a warrant officer is the subject matter expert, he or she should not be the lone workhorse that spends 12-14 hours a day working in isolation building a defense design, swapping a part, or working on data link connectivity. These situations are major avenues of development for Soldiers, NCOs and sometimes officers. This requires chief to be a leader, step back, and train/mentor his or her team in what the task is and how to accomplish it. Letting your Soldiers and NCOs go at 1400 and working until 2200 alone on a problem is not the solution. Keep those Soldiers and NCOs there,

teach them and let them learn what it really takes to keep the unit running. The coaching and mentoring also demonstrates the work ethic required to be successful.

All too often warrant officers find themselves hanging out with the NCOs and Soldiers from their section. While this helps build esprit de corps, it can have a negative side. CPT John Miller (Tom Hanks) from "Saving Private Ryan" said it best, "Gripes go up not down. You gripe at me, I gripe to my superior officer." How many times has a warrant officer been hanging out with the NCOs complaining about the mission, the command, or some policy? This ruins his or her credibility and shows a lack of professionalism. Joking and cutting up is fine to a point, we just need to know where to draw the line.

Value #3: The warrant officer cohort exists WITHIN the officer corps

For the last 15 years, warrant officers have defined ourselves by what we are not anymore. "We are not a corps." The fact is that we are a cohort within the officer corps, and it is long past time we embraced it and started to act like it. The Merriam-Webster dictionary defines corps as "a group of persons associated together or acting under common direction; a body of persons having a common activity or occupation." It defines cohort as "a group of individuals having a statistical factor in common in a demographic study." We are all officers, commissioned by the president. We are all leaders. We are all responsible for the health and safety of those NCOs and Soldiers we are appointed over. These things makes us a corps. What makes the warrant officers a cohort within that corps is the fact that we are not generalists in our fields. We are technical and tactical experts that advise commanders. This does not mean we are special or exempt from participating. Warrant officers are vital members of the units and are expected at unit activities. Whether

it is unit PT, the range, officer professional development meetings, hail and farewells, training meetings, etc., chief should be there. Commanders, if you are not inviting them, you must start. Your warrants have a wealth of knowledge and experience to help the unit get better. Warrant officers, if you are not attending, then I ask, “Why not?” Attending these functions shows your professionalism and commitment to the unit. It also sets an expectation standard for the NCOs, enlisted, and officers to follow. By not attending or getting involved, you are telling your commander that you do not care; you will damage your commander’s trust; you are tarnishing how you are remembered; and you are missing an opportunity to make a difference. Why would they listen to your advice at that point? You have, on your own, ruined your credibility and lost your commander’s ear. This results in failure as a warrant officer.

Engagement efforts

To support this campaign, CW3 David Hemingway, the proponent warrant officer, and I are taking deliberate steps to engage warrant officers, officers and NCOs directly. We are starting at the training base with engagements at the Warrant Officer Basic and Advanced courses, the Basic Officer Leader Course, the Captains Career Course, Pre Command Course, Advanced Leader Course, and Senior Leader Course. As traveling becomes available again, we will engage leadership at all echelons as well as the warrants and NCOs in their formations.

The branch has always looked to all of the warrant officers in the force to provide us candidates. This will not change. I expect you to take a more deliberate role in the development of the Soldiers and NCOs to raise their knowledge levels and increase their ability to help the branch succeed regardless of their future path, warrant,

NCO, or even officer. Our proponent warrant officer is not a recruiter, and using him as such is impractical when there are over 450, and growing, professionals in the field that should be stewarding our profession and culture.

At one point in our career, every warrant officer was an NCO. We were all developed by the NCO Corps. We were once members of the NCO Corps. We were born from that corps to become warrant officers. We must work closely with the NCO Corps as partners to strengthen both sides. I am asking first sergeants and sergeants major to play pivotal roles in identifying the right candidates. First sergeants know who their hard workers are, who their leaders are, and who strives for excellence. The soft spoken “techy” Soldier that is challenged in leadership roles is not an ideal warrant officer candidate. Warrant officers are technicians and leaders. We cannot be one or the other. We must be both.

As the chief warrant of the branch, I expect commanders to hold their warrant officers accountable. I expect high standards. The “most qualified” warrant officers in a formation should be those that are fully engaged members of the organization and not the specter that is occasionally seen in the motor pool pulling parts off a radar, holed up in the RT3 lab building defense designs, or entrenched in a shelter at a BCT, division or ADA unit integrating data links. My expectation is your warrant officers are the subject matter experts for your units and you can go to them for unvarnished counsel and advice. As accessions improve and the branch gets healthier, competition for promotion will get harder. It will be up to you as commanders to ensure the best are making the cut by providing accurate evaluations throughout your warrant officer’s career.

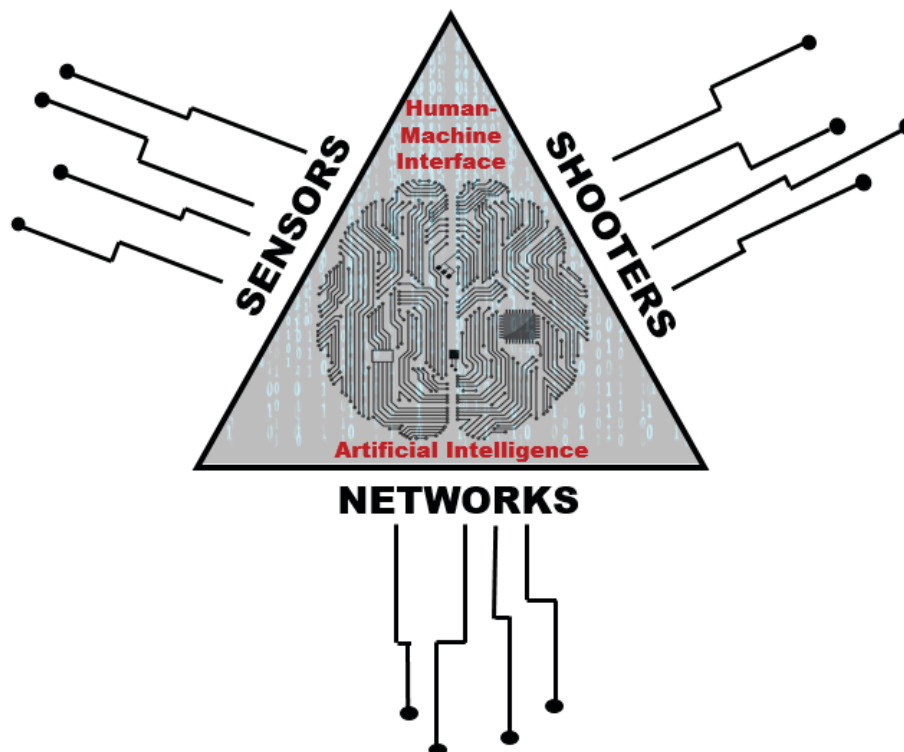
Shaping efforts

My predecessor, CW5 Eric Maule, created three programs to

assist with accessions. The first of these are accessions bonuses for 140K and 140L. To date, we have had 11 candidates accessed that will receive a bonus between \$10,000 and \$35,000 upon graduation from their basic course. We have 18 more packets for new candidates who are eligible for a bonus being processed with a projected six to eight additional packets by the end of the fiscal year. This program has been a success to say the least. While this bonus currently only applies to 140K and 140L, we are looking to grow it to 140A in the future. The second program was an Officer to Warrant Officer Program. We have had one 14A first lieutenant successfully graduate from the 140K Basic Course. The third program is the direct commissioning of senior NCOs to the rank of CW2. This program is still being staffed at the Army level, and has passed through legal review. I fully expect it to be in effect by the start of the fiscal year.

The successful promulgation of these values throughout our cohort, coupled with the engagement of NCOs and officers will have a positive effect across the entire branch. We will see increased accessions, increased development of NCOs and warrants, and increased career enjoyment. All of these will help to elongate the service of our warrant officers, fill our formations, and strengthen our senior ranks.

CW5 Mitchell Brown currently serves as the chief warrant officer of the Air Defense Artillery Branch. His previous assignments include Army Futures Command, Training and Doctrine Command, Army Test and Evaluation Command, 32nd AAMDC, 31st ADA Brigade, 35th ADA Brigade, 2-1st ADA Battalion (Patriot), 4-7th ADA Battalion (Patriot), 5-5th ADA Battalion (SHORAD), A Battery, 5th Battalion, 5th ADA (C-RAM), and B Battery, 304th Signal. He has deployed to Qatar, Iraq, Kuwait and Saudi Arabia in support of Operations Southern Watch, Desert Fox, Iraqi Freedom, Enduring Freedom and Spartan Shield.



The Army Concept of Fires

Laying the foundation for the future

Andres Arreola, Lance Boothe and LTC Robert Reece

Why concepts? To put it simply, concepts are the start point. In recent years, the Army has made modernization a top priority and it uses concepts as the entry point to drive capability development and define how the Army will fight in the future. Fires is among the top modernization priorities for the Army, making the U.S. Army Concept for Fires a critical document for shaping the future of the Army. It is the starting point for modernization.

The Army Concept for Fires (AC-Fires) is part of the Army Conceptual Framework. The purpose of that framework is to provide “a foundation for developing future capabilities and help Army leaders think clearly about future armed

conflict, learn about the future through the Army’s campaign of learning, analyze future capability gaps and identify opportunities, and implement interim solutions to improve current and future force combat effectiveness,” according to the former director of the Army Capabilities Integration Center (now the Future Capabilities Center), LTG (ret) H. R. McMaster. Thinking, learning, analyzing and implementing, indeed; the process by which the Army glimpses, if imperfectly, into a vague and uncertain future.

The Army Conceptual Framework, of which the AC-Fires is part, starts with a strategic vision from the National Defense Strategy and National Military Strategy

of the United States of America, publications produced by the National Security Council. From the guidance provided in these publications, a joint operating concept is produced, which in turn informs the Army’s operating concept. At present, a joint operating concept is under revision. The Army has recently published two seminal concepts: TRADOC Pam 525-3-1, The U.S. Army in Multi-Domain Operations 2028, and TRADOC Pam 525-3-8, U.S. Army Concept for Multi-Domain Combined Arms Operations at Echelons above Brigade (EABC) 2025-2045. These concepts inform the AC-Fires. So as expected, the AC-Fires describes how fires formations and capabilities support and enable

The U.S. Army Concept for Fires 2028-2040

The fires warfighting function is the related tasks and systems that create and converge effects in all domains against the threat to enable actions across the range of military operations.

Operational Environment

- Russian and Chinese long, mid, and short-range missile capabilities overmatch U.S. Army fires capabilities with advantages in capacity, range, and lethality
- Air/Land/Maritime superiority is not assumed. Russian and Chinese A2/AD capabilities limit USAF/USN/USMC/USA access in the operational and strategic fires areas
- Russia and China employ an integrated long-range fires complex, protected by integrated air defense systems (IADS), designed to mass fires on friendly maneuver from stand-off ranges
- Russia and China can contest in all domains with cyber, information warfare, and space-based ISR capabilities integrated with long range surface to surface and surface to air systems

Russian and Chinese Threat Capabilities

- Ballistic, Cruise, & Hypersonic Missiles
- Cyber & Information Warfare
- Unconventional Warfare
- Fixed & Rotary Wing Aircraft
- Integrated Air Defenses
- Recon-Fires-Strike Complex
- Long/Mid-Range Massed Artillery
- Unmanned Aircraft Systems
- Electronic Attack
- Counter Space & PNT
- Directed Energy
- CBRNE & WMD

Military Problem: How does Army fires enable the joint force to compete below the threshold of conflict and, if necessary, during conflict employ and converge multi-domain effects throughout the depth of the battlefield to target and counter A2/AD capabilities, defeat threats, enable joint maneuver in MDO, and return to competition on favorable terms?

Central Idea: Army fires contributes to the joint force by enabling deterrence in competition, and in armed conflict integrates and employs fires at all echelons, throughout the depth of the MDO battlefield framework, to penetrate and dis-integrate A2/AD capabilities, defend critical assets, and defeat threat capabilities to enable joint force maneuver. During return to competition, Army fires contributes by posturing capabilities and reconstituting forces to preserve the favorable condition established during conflict.

Components of the Solution

<u>Echeloned Capabilities</u>	<u>Enhanced Sensor-to-Shooter</u>	<u>Multi-Domain Targeting</u>	<u>Leverage JIIM Capabilities</u>
<ul style="list-style-type: none"> • Army fires structure and capabilities at all echelons • Shaping in depth/layered defenses • Improved range, lethality, mobility, and survivability • Convergence of effects 	<ul style="list-style-type: none"> • Any sensors, best shooter • JIIM network integration • Redundant and assured communications • AI enabled targeting, airspace and information management 	<ul style="list-style-type: none"> • All-domain target development in competition • Improved deliberate and dynamic target execution • Lethal and nonlethal fires convergence 	<ul style="list-style-type: none"> • Access to JIIM sensors and shooters • Shared understanding • System and network interoperability • Seamless integration

Key Fires Actions in Multi-Domain Operations by Echelon

<p>XXXX Theater Army</p>	<ul style="list-style-type: none"> • Support targeting in all domains • Set the theater for fires (calibrated force posture) • Establish theater fires architecture and linkage to supported CJTF / GCC • Conduct strategic attack, J-SEAD, Air Interdiction • Penetrate and dis-integrate A2/AD capabilities 	<ul style="list-style-type: none"> • Assist development/prioritization of critical asset lists • Assist development and dissemination of AADP, ACO, ACP, SPINS • Provide AIAMD SA/SU to all echelons and JIIM partners • Provide AMD forces for theater asset defense • Provide theater AMD early warning
<p>XXXX Field Army</p>	<ul style="list-style-type: none"> • Defeat threat long-range fires • Penetrate and dis-integrate A2/AD capabilities • Integrate cross-domain fires (CEMA/IO) • Employ J-SEAD 	<ul style="list-style-type: none"> • Develop Corps CAL/ADP in coordination with Theater/JIIM • Recommend ACMs for ACO inclusion • Integrate sensors into common operational picture • Develop Corps EMCON plan
<p>XXX Corps</p>	<ul style="list-style-type: none"> • Employ proactive and reactive counterfire, SEAD • Reinforce BCT fires • Integrate cross-domain fires (CEMA/IO) • Set conditions for BDE cross domain maneuver 	<ul style="list-style-type: none"> • Develop Division CAL/ADP in coordination with Corps/JIIM • Assist in airspace deconfliction • Provide AMD forces to support Division Area Defense Plan • Integrate sensors into common tactical picture
<p>XX Division</p>		

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The National Security Strategy, Summary of the 2018 National Defense Strategy of the United States of America, TRADOC Pamphlet 525-3-8 The U.S. Army in Multi-Domain Operations 2028, and U.S. Army Concept: Multi-Domain Combined Arms Operations at Echelons Above Brigade 2025-2045 contributed to the development of The U.S. Army Concept for Fires 2028-2040. (Courtesy illustration)

joint, interagency, intergovernmental and multinational (JIIM) efforts, in support of Multi-Domain Operations (MDO) in the 2028 and beyond timeframe. Future warfare requires the Army to integrate and execute fires to conduct MDO against future peer threats. This integration and execution falls to the Army's Fires Warfighting Function.

Fires defined

Before a functional concept can be imagined, the object of the function needs definition. While concepts are not bound by doctrine, current and emerging doctrine may inform a concept to create shared understanding for terms and techniques as a start point upon which to expand innovative ideas, or conversely to scope new ideas. Accordingly, the AC-Fires refers to the term "fires" within the context of existing and emerging doctrinal definitions to clarify future fires actions and identify required fires capabilities. Joint Publication 3-0 defines fires as "the use of weapon systems to create specific lethal and nonlethal effects on a target." Addition-

ally, joint fires is defined as "fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective." Army Doctrinal Publication (ADP) 3-19 Fires, dated July 31, 2019, defines the Fires Warfighting Function as "the related tasks and systems that create and converge effects in all domains against the threat to enable actions across the range of military operations." Under this broad definition, Army fires are understood to integrate and execute fires across the five domains of land, air, sea, space and cyberspace, as well as the electromagnetic spectrum and information environments to support JIIM operations.

To accomplish the tasks required to create and converge effects, Army fires employ or coordinate surface-to-surface fires, air-to-surface fires, surface-to-air fires, surface-to-space fires; integrate and synchronize cyberspace operations and electronic warfare with ground-based fires; and integrate space operations, multinational fires and special operations with joint fires to support MDO. Army

Fires are integrated with JIIM operations through the targeting and operations processes; fire support planning; airspace planning and management; electromagnetic spectrum management; multinational integration, rehearsals; and air and missile defense planning and integration. To this end, the AC-Fires focuses on concepts for integrating fires at all echelons to penetrate and disintegrate threat anti-access and area denial (A2/AD) capabilities and strategies, defend critical assets, and defeat threat fires to enable joint force freedom of action. The AC-Fires presents concepts for how the Army will conduct fire support, targeting and air and missile defense in the future.

A central idea

Any multifaceted concept such as the employment of Army fires must spring from a central, overarching idea. The AC-Fires asserts that Army fires contributes to the joint force by enabling deterrence in competition, and in armed conflict integrates and employs fires at all echelons, throughout the depth of the MDO battlefield

framework, to penetrate and disintegrate A2/AD capabilities, defend critical assets, and defeat threat capabilities to enable joint force maneuver. During return to competition, Army fires contribute by posturing capabilities and reconstituting forces to preserve the favorable condition established during conflict.

This central idea for future Army fires leads, logically, to four components of the solution that are critical to success in MDO: echeloned fires capabilities; enhanced sensor-to-shooter linkages; multi-domain targeting; and leverage JIIM capabilities. These components form the essential role of fires in the future operational environment and support the key tenets and solutions described in the Army Operating Concept (AOC), TRADOC PAM 525-3-1 The U.S. Army in Multi-Domain Operations 2028. These components have been validated in recent experimentation and are rooted in Army success in large-scale combat operations against peer threats in the 20th Century. Understanding the past provides a window into the future, because the nature of war is unchanging and immutable. Rooted in each solution are requirements to leverage emerging technologies that advance the role of fires, including artificial intelligence, robotics and autonomous solutions, advanced target recognition, and technologies that expand range, enhance lethality and improve survivability.

Solution components

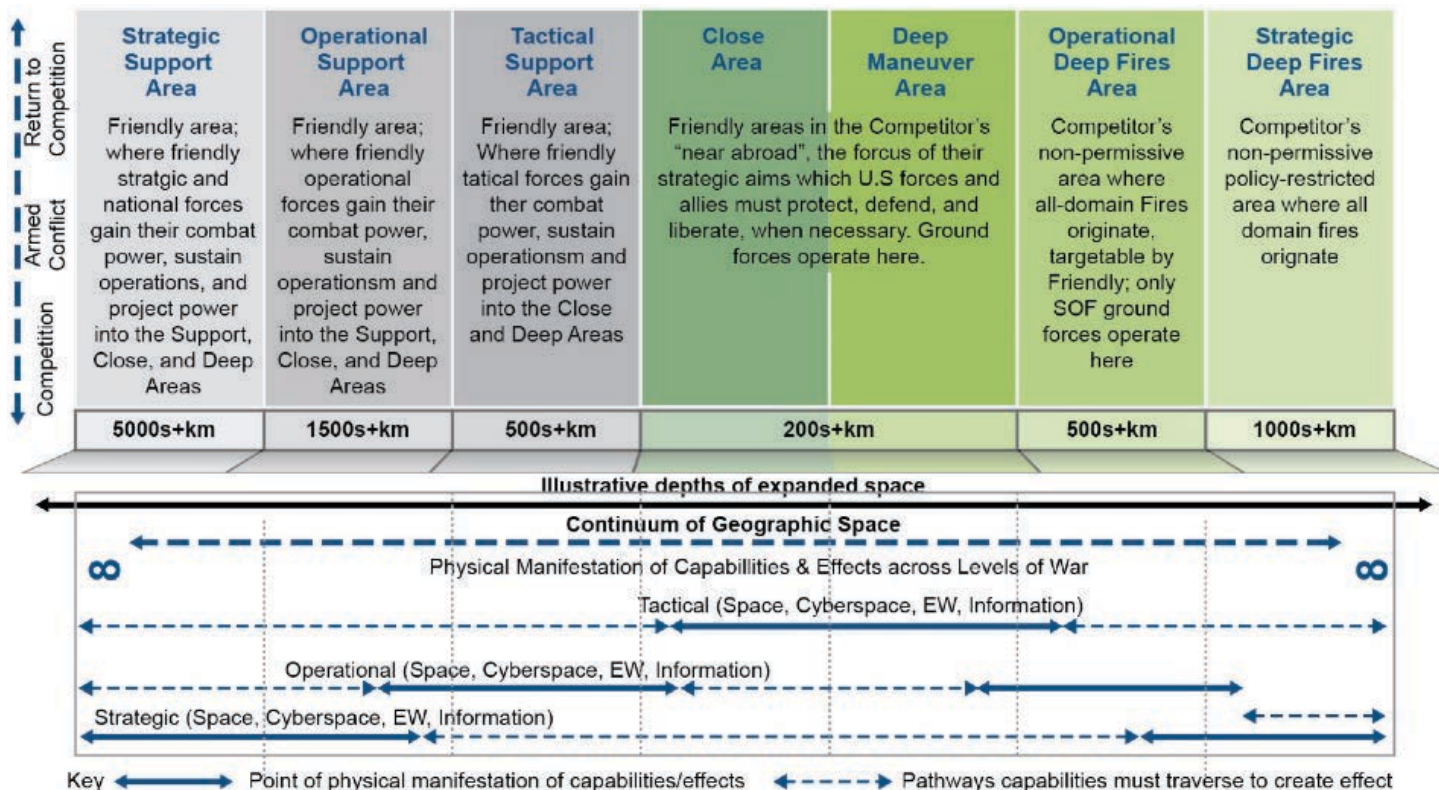
Echeloned capabilities. The Army fights in echelons, spanning across each level of war from tactical to strategic, each dependent upon the other for success. Fires formations at all echelons provide responsive fires to support strategic, operational and tactical operations to win through MDO. Army fires require structure and capabilities at all echelons in order

to shape in depth and provide a layered defense. Echeloned capabilities give the Army the ability to fight extended campaigns, cover vast distances of physical terrain and provide an array of fires capabilities coupled with requisite authorities to employ them. Echeloned capabilities are critical to the employment of effective fires in all domains in large-scale combat operations and help the Army set desired conditions at decisive points.

Enhanced sensor-to-shooter linkages. The Army must move toward any sensor, best shooter as a state-of-being. The temporary and ad hoc arrangements between sensors and shooters that have been the norm for decades will not be effective in future warfare where the scale, scope and rapid decision cycle required to employ responsive, effective fires will determine success and failure. In the future, automated battle management tools must overcome human constraints to responsiveness and minimize human cognitive overload through a ‘human on the loop’ interface where sensors and shooters are rapidly converged from multiple networks across domains, monitored through common data terminals and managed by exception, creating an “any sensor, best shooter” paradigm. Sourcing of data from sensors across domains and pairing that data with the best available shooter enables rapid target engagement regardless of domain. These enhanced linkages move the Army beyond simple kill-chains and help establish the creation of “joint kill-webs” that push and pull targeting data from a wide array of available sensors to the desired capability that can create the desired effect on the target. Building trust in this kind of system of systems requires rigorous joint and combined training to achieve confidence in the advanced automated tools, which will have the potential to employ fires without a human decision-maker directly in the loop.

Multi-Domain Targeting. MDO requires Army fires to support the commander’s targeting priorities by leveraging existing and emerging technologies to stimulate, see, understand and strike targets across domains with input from JIIM partners to create lethal and nonlethal effects. However, MDO does not drive a departure from the Army Targeting Process (Decide, Detect, Deliver, Assess) or the Joint Targeting Process, but it does require a unified approach to targeting at echelon, including the integration and synchronization of lethal and nonlethal effects in all domains to enable convergence. In order to effectively penetrate and disintegrate A2/AD capabilities, the Army cannot afford to wait until armed conflict to build accurate intelligence and determine effective targeting solutions against threat A2/AD capabilities. Therefore, the Army (along with joint and multinational partners) must conduct thorough and continuous target development against threat high-payoff targets before reaching the threshold of war. Greater flexibility in both deliberate and dynamic targeting procedures must be implemented to meet the time-sensitive demands of targeting in MDO.

Leverage JIIM capabilities. In all future operations, Army-only solutions will not be enough to address the problem. Current policy restrictions as well as limited network and platform interoperability hinder the Army’s ability to share data, system capabilities and even network connectivity, which constrains the ability to access and provide capabilities. To be successful in MDO, Army fires must be enabled by JIIM sensors and shooters to seamlessly integrate and converge fires into operations. This requires improved information sharing with JIIM partners to integrate the full range of capabilities available and enable seamless integration. Interoperable systems and the implementation of cross-domain solutions are required to optimize operations and facilitate real-time coordina-



An analysis of the different mission areas. (Courtesy illustration)

tion of fires. Leveraging JIIM capability allows the Army to increase the magazine depth of multi-domain capabilities available to address the threat.

Embracing the future

Regardless of how imperfectly the Army divines the future, an analytical approach proves most viable for shaping the future force and how it will employ emerging technologies, making the future battlefield more lethal within an operations tempo, which will strain human endurance and ability to synthesize. The AC-Fires attempts to provide a foundation for understanding these challenges. The AC-Fires introduces new and innovative capabilities for testing and experimentation in the coming years, described in detail in its science and technology appendix.

The AC-Fires describes fires capabilities necessary to execute MDO within the context of a central idea, which provides the framework for the components of the solution presented

– echeloned capabilities, enhance sensor-to-shooter linkages, multi-domain targeting and leveraging JIIM capabilities. Derived with data captured from experimentation, these components of the solution drive discussion and frame future assessments for leadership, industry and capability developers. Army fires will continue to play a critical role in joint force operations. These operations in the future operational environment will occur in all domains, requiring the Army as part of the joint force to counter complex, advanced peer threats. For the Army to execute MDO throughout the expanded battlefield, fires must be delivered responsively, integrated at all echelons and across the joint force.

The Army Concept for Fires provides broad conceptual underpinnings to pursue future technologies, capabilities and doctrine, organizations, training, materiel, leadership and education, personnel, facilities, and policy solutions to modernize and equip Army fires to support MDO. On track to be officially released this summer, the Army Concept for Fires is a must

read for all leaders, especially those who play a role in the integration and employment of fires. Thinking about future warfare is a professional responsibility and an essential part of preparing for victory against emerging threats.

Andres Arreola serves at the deputy, Army Capability Manager-Army Air and Missile Defense Command, Capabilities Development and Integration Directorate at the Fires Center of Excellence, Fort Sill, Okla. Arreola is retired Air and Missile Defense officer with a Master of Arts Degree from the University of Texas El Paso.

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NATO allies continue to sustain readiness with Tobruq Arrows

By SGT Dommnique Washington

U.S. Soldiers assigned to 5th Battalion, 4th Air Defense Artillery Regiment, 10th Army Air and Missile Defense Command, participated in a joint multinational training exercise with NATO allies, Latvia and Lithuania from June 7 through 10, 2020, in Jurmalciems, Latvia.

The exercise, Tobruq Arrows, is the combined live-fire iteration of Tobruq Legacy 20, which is scheduled to take place in September. This is also the first air defense live fire hosted in Latvia as part of the Tobruq Legacy series.

"This all leads to a higher level of readiness for the alliance" said BG Greg Brady, commanding general of 10th AAMDC. "With maintaining that readiness, we can maintain our overmatch but just as importantly, we can improve all of our capabilities together."

For the Soldiers of the battalion to participate in Tobruq Arrows, it required in-depth planning and preparation to be done in advance. The risks associated with COVID-19 were taken into consideration throughout the planning process.

"Usually for an exercise like this, our Soldiers would train up for it for about a month," said 1SGT Bryan Norris, first sergeant of C Battery, 5-4th ADAR. "With the presence of 'COVID' we've had to change things up and put additional measures in place."

In addition to training variations, all Soldiers were required to conduct a 14-day restriction of movement and COVID-19 testing prior to traveling to Latvia. Additional precautions were taken during the travel and participation of the exercise.

"We had a couple of extra buses secured to make sure we were able to do more physical distancing in route to the site," said MAJ Matthew Westhoff, command surgeon of 10th AAMDC. "As we're here, we continue to use face masks when the mission requires having to work closely as well as continuing to practice good hygiene."

During the exercise Latvian, Lithuanian and U.S. troops participated in a diverse range of training scenarios, which allowed them to routinely fire their service specific air defending artillery.

The battalion displayed the capabilities of their Avenger system, along with its 50-caliber machine gun and FIM-92 Stinger Man Portable Air Defense System. These weapon systems are designed to engage in aerial targets and are some of the U.S. Army's best short-range air defense assets.

Communication is another essential part of any joint defensive movement. Latvian and U.S. Soldiers practiced integrating signal and communication as-

sets. This enabled the NATO teams in Latvia and Germany to track everything that happened during the exercise.

"Our equipment, along with the Latvian radar, is providing an air picture of this range back to our command team," said CWO3 Jarrad Chamberlin, C-2 systems integrator for 5-4th ADAR. "From there, we're sending that air picture via satellite back to Germany. This has never been done before."


With the successful completion of this exercise, the NATO allies proudly displayed their ability to perform despite COVID-19 or any other obstacle that may present itself.

"With the discipline of this battalion, we were able to mitigate the risk of COVID-19 and maintain a high level of readiness," Brady said. "Maintaining air missile and defense readiness is critical."

SGT Dommnique Washington is a public affairs mass communication specialist assigned to the 7th Mobile Public Affairs Detachment at Fort Hood, Texas. The 30-year-old Lubbock, Texas, native has over 10 years of active duty service in the United States Army. Washington is currently on a nine-month overseas rotation through Europe in support of Operation Atlantic Resolve.

The Avenger Air Defense System is one of the short-range air defense assets used during the Tobruq Arrows live-fire exercise in Jurmalciems, Latvia. (SGT Dommnique Washington/U.S. Army)





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