Maintaining Air Superiority: ADA Planning and Execution in Brigade Combat Teams

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No. 26-1152

March 2026

Introduction

The Joint Multinational Readiness Center (JMRC) in Hohenfels, Germany, serves as the Europe-based combat training center (CTC) where U.S. and allied units converge to test and refine their capabilities. Each rotational training unit (RTU) undergoes a rigorous 10-day exercise designed to challenge them at all levels. Within this framework, air defense artillery (ADA) plays a crucial role in protecting the airspace, operating as part of the brigade's air defense airspace management/brigade aviation element (ADAM/BAE).

This article consolidates observations, lessons learned, and recommendations regarding current and past ADA operations at the brigade level in the operations process framework (plan, prepare and execute, and continually assessing)[1]. The analysis draws on recent assessments of the operational environment, highlighting key areas for improvement to maintain air superiority and protect critical assets. This document serves as a blueprint for ADA considerations within a brigade prior to a JMRC rotation. The intent is to summarize critical considerations for ADA planning and execution, focusing on the effective use of organic brigade ADA assets in accordance with current army doctrine.

Organic and Attached Air Defense Capabilities

The ADAM/BAE cell integrates air defense and brigade aviation assets within the operations section. Led by an air defense officer (ADO) or an air and missile system integrator (140A), its primary mission is to deconflict the airspace to ensure the safe and effective employment of air defense systems and attack helicopters. The cell maintains the common operational picture/single integrated air picture (COP/SIAP)[2] and executes airspace coordination measures to prevent fratricide and maximize mission effectiveness. As the brigade's air defense subject matter expert, the ADO advises the commander and staff on enemy air threats, friendly capabilities, and airspace control procedures. They translate technical data into actionable intelligence, synchronize subordinate air defense elements, and actively deconflict flight paths to protect ground forces and aviation assets.

A brigade's only organic air defense capability is the man-portable air defense system (MANPADS), or Stinger weapon system. The brigade's ADO plans the training and certification of Stinger teams. Within the ADAM Cell, the ADO uses the forward area air defense (FAAD) system for command and control and the air and missile defense workstation (AMDWS) for planning. While dedicated ADA personnel operate these systems at the command post, the brigade typically assigns Stinger systems to other, non-ADA Soldiers as an additional duty.

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[1] Field Manual (FM) *5-0 Planning and Orders Production.* 4 November 2024. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN44590-FM_5-0-001-WEB-3.pdf

[2] Army Techniques Publication (ATP) 3-01.50 *Air Defense and Airspace Management (ADAM) Cell Operation*. 5 April 2013. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/atp3_01x50.pdf

Prior to a JMRC rotation, units can request additional, non-organic air defense assets like Avengers and maneuver short-range air defense (M-SHORAD). When attached to a brigade these elements provide localized, short-range air defense, protecting critical assets from threats like unmanned aircraft systems, helicopters, and low-flying aircraft. To be effective, these ADA elements must remain mobile and responsive, displacing as needed to support maneuver.

The task organization ADA element varies depending on the mission and threat. However, its primary function remains to defeat enemy air threats by integrating into joint fights, providing early warning, and enhancing situational awareness. The core principle remains consistent: the ADA attachment provides localized air defense, protecting brigade's forces and enabling mission success.

ADA battery

An ADA battery provides the brigade with integrated air and missile defense capabilities that protect maneuver forces, critical assets, and key terrain from aerial threats. The battery delivers early warning of enemy air activity through continuous airspace monitoring and radar surveillance, enhancing the brigade's situational awareness and common operational picture.[3] It establishes layered defense by conducting area defense operations across the brigade's area of operations and point defense missions for high-value assets such as command posts, logistics nodes, and fire support platforms. The battery enables freedom of maneuver by providing mobile air defense that accompanies brigade elements during offensive and defensive operations.[4] Through coordination with the ADAM/BAE cell, the battery integrates air defense operations into the brigade's scheme of maneuver, deconflicts airspace for friendly aviation and fires, and receives real-time targeting data to engage enemy aircraft and unmanned aircraft systems.[5]

While doctrine clearly defines the ADA battery's capabilities and responsibilities, recent observations from OC/Ts at JMRC reveal persistent gaps between doctrinal standards and operational execution. These shortfalls span the entire training cycle—from initial planning through final execution—and directly degrade the brigade's ability to defend against aerial threats. The following observations, organized with the plan, prepare, execute, and continually assessing framework[6], identify specific deficiencies that commanders must address to ensure their air defense assets arrive at CTC rotations ready to perform their mission and protect the force.

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[3] FM 3-96 *Brigade Combat Team*. 19 January 2021. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN31505-FM_3-96-000-WEB-1.pdf

[4] FM 3-01 *Air Defense Artillery in Large-Scale Combat Operations*. 26 August 2025. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN44767-FM_3-01-000-WEB-1.pdf.

[5] FM 3-01.44 *Short-Range Air Defense Operations*. 21 July 2022. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35838-FM_3-01.44-000-WEB-1.pdf.

[6] FM *5-0 Planning and Orders Production.* 4 November 2024. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN44590-FM_5-0-001-WEB-3.pdf

PLAN: Long-Range Preparation and Continuity

Observation. Personnel turnover causes key planners to miss subsequent conferences and the exercise itself, hindering planning continuity.

Discussion. The U.S. Army's personnel assignment cycle frequently clashes with the nine-month joint event life cycle, creating a significant point of friction for units preparing for a JMRC rotation. This institutional challenge directly causes a lack of planning continuity, as the original architects of the training plan often depart before its finalization or execution. When these key planners leave, they take with them the nuanced understanding of initial negotiations, the rationale behind critical decisions, and the informal relationships built with their JMRC counterparts. Arriving mid-stream, new personnel must reconstruct this complex history from stale notes and incomplete records. This process inevitably causes them to lose details and make flawed assumptions. This breakdown degrades the entire planning effort from a deliberate, forward-looking process into a reactive scramble, ultimately forcing the unit to arrive at one of its most critical training events unprepared and behind schedule.

Recommendation. Brigade leadership must proactively designate and protect a core planning cell for the entire nine-month joint event life cycle. Leaders must identify personnel not projected to move and formally assign them enduring responsibility for the JMRC rotation. The brigade must empower this core cell to maintain a robust knowledge management system that ensures all decisions, contacts, and key documents remain centrally located and accessible. By creating this dedicated team and shielding it from competing requirements, the brigade builds a base of expertise, maintains planning momentum, and ensures that institutional knowledge survives the Army’s personnel cycle, so the unit arrives at JMRC fully prepared.

PREPARE: Home-Station Training and Asset Integration

Observation. Rotational units consistently arrive at JMRC with uncertified Stinger teams who possess little to no hands-on experience with the weapon system. As a result, these units must use critical pre-exercise time for basic instruction.

Discussion. This "just-in-time" training approach demonstrates a systemic failure to prioritize air defense at the home station. It treats a complex and perishable combat skill as an additional duty, guaranteeing that operators lack the proficiency and confidence needed to perform under stress. Army doctrine establishes that live-fire training is the primary tool for training marksmanship under field conditions, fire distribution and control, weapons confidence, and synchronization of fires and their effects, while also building Soldier confidence in assigned weapons systems and leader confidence in collective readiness.[7]

[7] FM 7-0 *Training*. 14 June 2021. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35076-FM_7-0-000-WEB-1.pdf

The problem extends beyond inadequate training time to include a critical shortage of training resources. The scarcity of live Stinger training rounds compounds this challenge, forcing units to rely almost exclusively on simulation training. While the Stinger Training Dome provides valuable virtual training opportunities,[8] it cannot replicate the physical sensation, stress, and confidence-building effect of launching a live missile. Without experiencing the weapon's launch sequence, back-blast, and flight characteristics under realistic conditions, operators arrive at combat training centers and potential combat operations without the muscle memory and psychological preparation required to engage enemy aircraft effectively under the extreme stress of actual combat.

This lack of preparation directly leads to missed engagement opportunities and creates an unnecessary vulnerability for the entire brigade. When Stinger teams cannot confidently identify, track, and engage aerial threats, the brigade loses a critical layer of its integrated air defense, leaving high-value assets exposed and forcing commanders to accept risk during operations.

Recommendation. Brigade leadership must mandate and resource a robust home-station training and certification program for all assigned Stinger operators. The ADO must lead this effort, utilizing certified master gunners to conduct rigorous, hands-on training that culminates in gunnery certification. Brigade leadership must hold Stinger teams to the same readiness standard as other combat crews, ensuring operators possess the confidence and proficiency to engage threats under stress and are fully prepared for the combined arms fight.

Observation. Soldiers assigned to Stinger teams consistently lack sufficient training in operating the system with night vision goggles. Figure 1 depicts a Stinger team engaging “red air” through night vision goggles.

[8] Burton, Robert; Berryman, Craig; MAJ Sutton, Samuel; Stermer, Jeremy. *Home-Station Training*. Center for Army Lessons Learned. 2025. Digital.

Figure 1. Stinger team engaging "red air" through night vision goggles. (JMRC)

Discussion. This specific training deficiency effectively neutralizes the brigade's short-range air defense capability during periods of darkness. Given that enemy forces often leverage night to mask their operations, this creates a predictable and dangerous vulnerability. A Stinger team that cannot confidently identify and engage targets at night is only a part-time asset, leaving the force unprotected when it is often most at risk.

Recommendation. Home-station training programs must include extensive and realistic night operations. The ADO must ensure that all Stinger operators repeatedly practice identifying, tracking, and simulating engagements on realistic targets in limited visibility conditions while using night vision goggles. This training must move beyond simple familiarization to build the true proficiency required to win the night fight. Failing to train Stinger teams to operate effectively with night vision goggles cedes the night sky to the enemy and creates a critical, predictable vulnerability when the brigade is most at risk.

EXECUTE: Dynamic Command, Control, and Communication

Observation. During exercises, the ADAM/BAE cell identifies enemy air threats, but this critical information consistently fails to reach the tactical-level Stinger teams in time for them to engage.

Discussion. This communication breakdown renders the brigade's early warning capability ineffective. Ground-focused subordinate units often fail to relay warnings with the necessary urgency, and communication plans frequently neglect the specific needs of the lowest tactical levels. An uncommunicated threat becomes an unengaged threat, directly creating a window of opportunity for the enemy and neutralizing the effectiveness of the air defense assets on the ground.

Recommendation. The brigade signal officer and the air defense officer must collaboratively design and resource a communication plan that guarantees redundant voice and data links directly to each Stinger team. The ADAM/BAE cell must then aggressively push alerts through these dedicated channels, maintain a digital and analog COP, while the air defense annex must explicitly task subordinate units with the non-negotiable responsibility of relaying these warnings immediately. Figure 2 illustrates the ADAM NCOIC locating potential "red air" on an analog tracker.

Figure 2. ADAM NCOIC locating potential "red air" on an analog tracker. (JMRC)

Observation. Brigade air defense officers frequently delegate the responsibility for Stinger team emplacement to subordinate maneuver units and subsequently lose situational awareness of their own assets' locations.

Discussion. When the air defense officer fails to create and enforce a comprehensive defense design, they relinquish their role as the brigade's air defense subject matter expert. This practice leads to poorly positioned assets that can leave likely enemy air avenues of approach uncovered. It makes the air defense officer blind, unable to direct their forces or provide accurate assessments to the commander. This lack of centralized control and expert planning creates a permissive environment for enemy air attacks and puts the entire brigade at risk.

Recommendation. The brigade ADO must design, publish, and enforce a comprehensive air defense plan that includes a visual representation on the common operational picture showing the location and status of every air defense asset. Through active command and control, the ADO and the ADAM/BAE cell must relentlessly track these assets, ensuring their positioning aligns with the defense design and provides maximum protection for the brigade's critical assets. The ADO must own the defensive plan from creation to execution, maintaining centralized control rather than delegating asset emplacement to maneuver units. The brigade signal officer and ADO must collaboratively design and resource a communication plan that guarantees redundant voice and data links directly to each Stinger team, ensuring that critical alerts reach tactical-level operators immediately and that early warning translates into timely engagement. Figure 3 illustrates a digital COP displaying all friendly unit air defense and electromagnetic warfare locations.

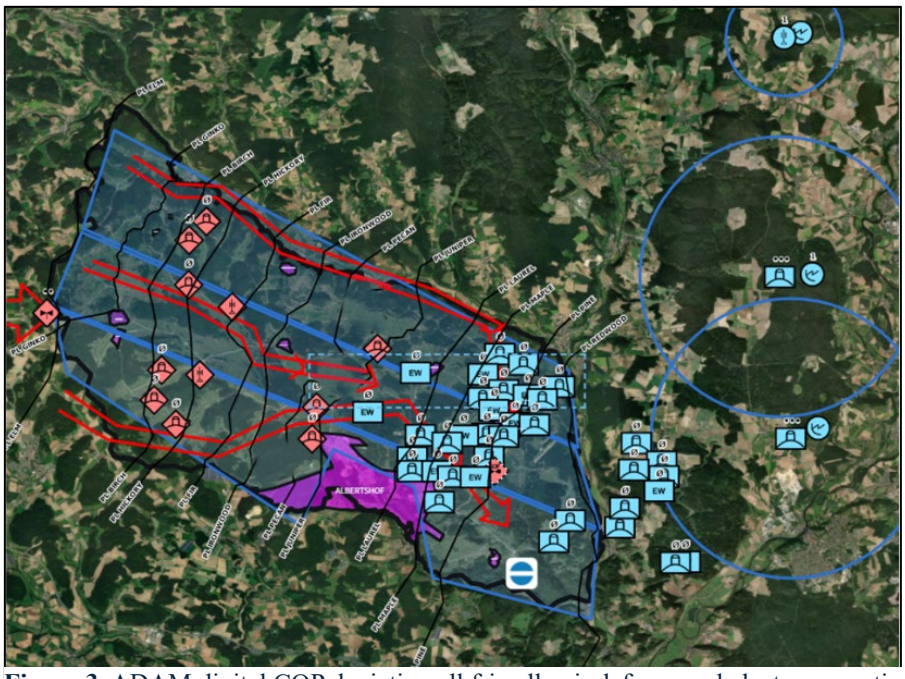

Figure 3. ADAM digital COP depicting all friendly air defense and electromagnetic warfare locations. (JMRC)

Conclusion

Based on the analysis of ADA operations at JMRC, systemic issues in planning, preparation, and execution undermine the effectiveness of brigade-level air defense. To ensure mission success

and the protection of forces, brigades must fundamentally shift their approach from a reactive, "just-in-time" model to one of deliberate and continuous readiness.

This requires a multi-faceted approach. First, leadership must ensure planning continuity by creating and protecting a core planning cell from the turbulence of personnel turnover. Second, brigades must treat air defense proficiency as a critical combat skill, mandating rigorous, home-station training and certification for all Stinger teams, with a specific emphasis on realistic night operations. Finally, the ADO must actively command and control the air defense fight, designing a comprehensive defense plan and ensuring redundant communication architecture is in place to push timely warnings directly to the tactical-level operators.

Ultimately, the lessons from JMRC demonstrate that air superiority at the tactical edge is not a given. It is the direct result of disciplined planning, intensive preparation, and active command. By implementing these recommendations, brigades can transform their ADA elements from a vulnerable, underutilized asset into a lethal and indispensable component of the combined arms team, fully prepared to dominate the airspace and secure the mission.