# ATP 3-01.7

# Air Defense Artillery Brigade Techniques

**MARCH 2016**

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## Headquarters, Department of the Army

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***ATP 3-01.7**

Army Techniques Publication
No. 3-01.7

Headquarters
Department of the Army
Washington, DC, 16 March 2016

# Air Defense Artillery Brigade Techniques

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# Preface

Army Techniques Publication (ATP) 3-01.7 Air Defense Artillery (ADA) Brigade Techniques provides the doctrinal foundation on how ADA brigades fight in support of Unified Land Operations. This publication provides organizational guidance and functional techniques used by ADA brigades to protect the force from aerial attack as a component of Army and joint operations.

The principal audience for ATP 3-01.7 are ADA brigade commanders, staffs, planners and Soldiers. This manual also is required reading for leaders who will direct and supervise the employment of Patriot units. This manual also is required reading for leaders who will direct and supervise the employment of ADA units.

Commanders, staffs and subordinates ensure their decisions and actions comply with applicable U.S., international and in some cases, host-nation laws and regulations. Commanders at all levels must ensure their Soldiers operate in accordance with the law of war and the rules of engagement.

ATP 3-01.7, ADA Brigade Techniques, uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. For definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition. This publication is not the proponent for any Army terms.

ATP 3-01.7, ADA Brigade Techniques applies to the Active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

Unless this manual states otherwise, masculine nouns and pronouns do not refer exclusively to men.

The proponent for this publication is the United States Army Fires Center of Excellence and Fort Sill. The preparing agency is the Directorate of Training and Doctrine, ADA Branch. Send written comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publication and Blank Forms) directly to Commandant, United States Army Air Defense Artillery School, ATTN: ATSF-DD, Fort Sill, OK 73503 or via email at usarmy.sill.fcoe.mbx.dotd-doctrine-inbox@mail.mil.

# Introduction

ATP 3-01.7 describes the ADA brigade techniques and organization in support of the ADA battalions and battery's. ATP 3-01.7 is a revision of FM 3-01.7, *Air Defense Artillery Brigade Operations*, last published in February 2011.

ATP 3-01.7 is for commanders, staffs and Soldiers assigned to the ADA brigade to support the ADA battalions. This manual provides information on the role and functions of each organization within the Brigades. ATP 3-01.7 provides relevant information to support the brigades and echelons below.

ATP 3-01.7 chapters discuss various techniques for use by ADA Brigade commanders and staffs. The four chapters and four appendices are:

- Chapter 1 includes the ADA brigade, its role in Army operations, ADA brigade's organization and staff sections
- Chapter 2 describes the operations of the ADA Brigade to include the ADA operational concept, employment guidelines, ADA in the operational context, and counterair operations.
- Chapter 3 provides an overview mission command and mission command relationships within the brigade.
- Chapter 4 is about the Joint Operations Area defense operations and the ADA brigade threat, concept of operation and sustainment operations.

Appendix A discusses the AMDPCS system and provides hardware and software applications.

Appendix B provides an overview of the Air Defense Artillery Fire Control Operations (ADAFCO) and its integration.

Appendix C discusses the ADA Brigade Tactical Operations Center and its equipment.

Appendix D describes the ADA communications systems used by the ADA brigade.

## Summary of Changes

ATP 3-01.7 has changed from its superseded publication FM 3-01.7, dated 11 February 2011. Changes are reflected throughout the chapters and appendices of this publication. Major changes were driven through the latest publishing of FM 3-01 *U.S. Army Air and Missile Defense Operations*, dated 2 November 2015, which discusses air and missile defense tactics and employment procedures. ATP 3-01.7 focuses on the role of the ADA Brigade, its operational concept, and command and support relationships with the Army Air and Missile Defense Command, Army division and brigade headquarters, and contributions to joint operations.

- ATP 3-01.7 remains generally consistent with superseded FM 3-01.7, on key topics while adopting structural changes as necessary.
- Chapters and appendices within this ATP have been revised from the previous version of FM 3-01.7, dated 11 February 2011 to specifically discuss techniques used by ADA Brigade Commanders to employ the ADA Brigade.
- Chapters and appendices within this ATP that have revisions from its superseded publication includes:
  Chapter 2 ADA Brigade Operations
  Chapter 3 Mission Command
  Chapter 4 Joint Operations ADA Operations
  Appendix B Air Defense Artillery Fire Control Operations (ADAFCO) Organization and Operations
  Appendix C ADA Brigade Tactical Operations Center Equipment

# Chapter 1
# The ADA Brigade

This chapter discusses the ADA brigade, its role and participation in Army and joint operations. Commanders must understand doctrine to synchronize ADA organizations and systems with the supported force's main effort and concept of operations. This chapter also discusses the organization of the ADA brigade.

## ADA BRIGADE

1-1. The structure of the ADA brigade is to perform several functions supporting the Army Air and Missile Defense Command (AAMDCs), their subordinate units and designated geographical command organizations integrating air and missile defense (AMD) forces and operations ( FM 3-01). The ADA brigade is the focal point for solving technical and procedural integration and interoperability problems to form a cohesive ADA organization. The ADA brigade will coordinate with the AAMDC or the supported corps AMD planning cell and subordinate units to establish the ADA command and support relationships and early warning architecture throughout the ADA brigade's area of operations. Integration tasks at this level may include coordinating for additional signal assets and tactical data links to commercial national warning systems. The ADA brigade's communications and early warning architectures is developed based on air defense plans and required integration techniques provided by the interface control officer (ICO) at the AAMDC, corps, or joint network design teams.

1-2. Essential tasks performed by the ADA brigade are:

- Integrate ADA assets in accordance with the area air defense plan (AADP).
- Allocate available assets throughout the operational area.
- Deploy early warning system.
- Coordinate airspace control activities with theater, corps and subordinate ADA cells.
- Recommend AMD tactics and techniques to best counterair and missile threats.

### THE BRIGADE ROLE

1-3. The ADA brigades are the force providers for the AAMDCs, meeting the commanders' AMD objectives. ADA brigades, both active and reserve component, must be prepared to integrate a mix of active and reserve component forces.

1-4. The ADA brigade commands, equips, trains, and deploys ADA forces in support of AMD missions.

### BRIGADE ORGANIZATION

1-5. The ADA brigade performs the fires warfighting function to meet combatant commander (CCDR) or AAMDC commander directives to accomplish the AMD mission. ADA brigades are organized by sections designed to perform specific functions within the command. The brigade will organize according to mission, enemy, terrain and weather, troops and support available, time available, civil considerations (METT-TC) factors, and the commander's decisions. Figure 1-1 illustrates an example of an ADA brigade organization.

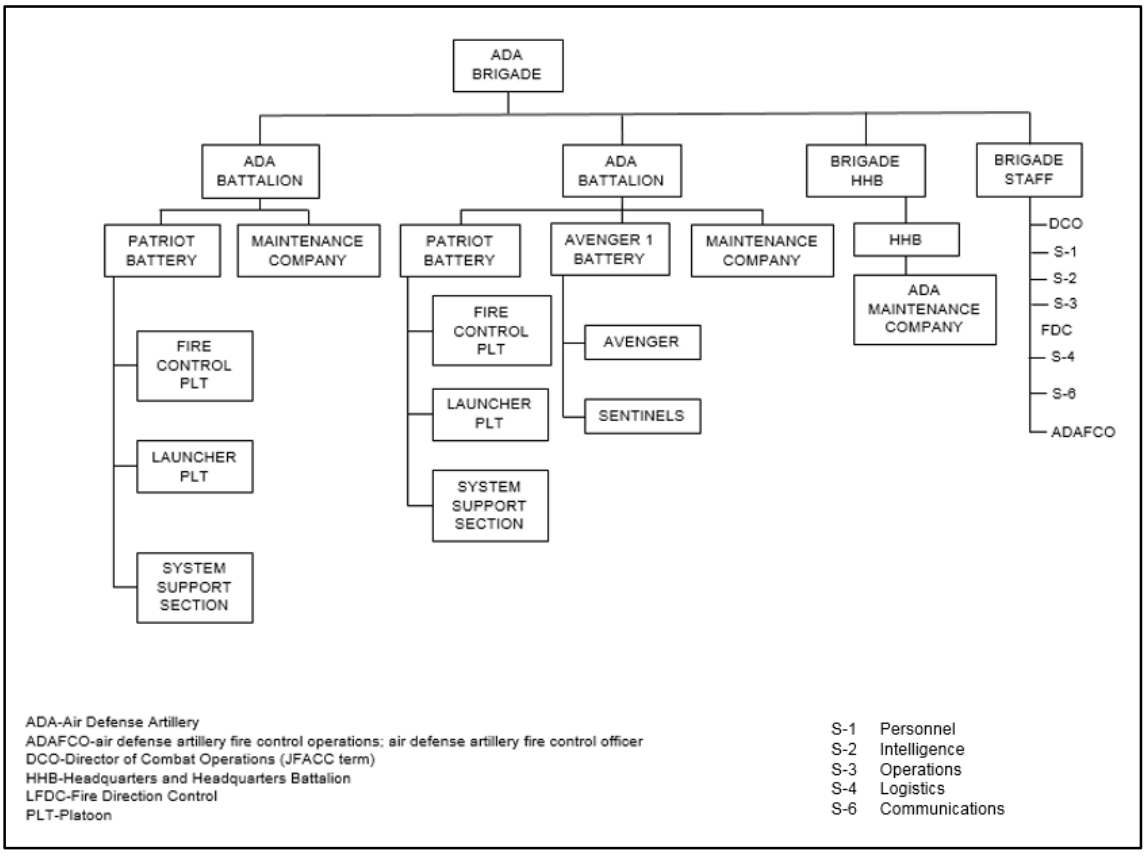



**Figure 1-1. ADA Brigade Organization**

## Command Group

1-6. The command group consist of the commander and selected staff members who assist the commander in controlling operations away from a command post. The command group is organized and equipped to suit the commander's decision-making and leadership requirements. It does this while enabling the commander to accomplish critical mission command warfighting function tasks anywhere in the area of operations.

1-7. Command group personnel include staff representation that can immediately affect current operations, such as maneuver, fires (including the air liaison officer), and intelligence. The mission and available staff, however, dictate the command group's makeup. For example, during a deliberate breach, the command group may include an engineer and an air defense officer (FM 6-0).

## ADA Brigade Staff Sections

1-8. The ADA brigade commander is supported by staff sections (S-1 thru S-6). In addition to the mission command staff tasks, each staff element has specific duties and responsibilities by the area of expertise. The staff sections share a set of common duties and responsibilities:

- Advising and informing the commander.
- Building and maintaining running estimates.
- Providing recommendations.
- Preparing plans, orders, and other staff writing.
- Assessing operations.
- Managing information within area of expertise.
- Identifying and analyzing problems.
- Conducting staff assistance visits.

- Performing risk management.
- Performing intelligence preparation of the battlefield.
- Conducting staff inspections.
- Conducting staff research.
- Performing staff administrative procedures.
- Exercising staff supervision over their area of expertise.
- Consulting and working with the servicing legal representative.

# ADA BRIGADE CAPABILITIES

1-9. Air defense weapon systems of the ADA brigade provide responsive, day and night, all weather, all-altitude protection from aerial and missile threats. The ADA brigade provides air and missile defense to supported commanders, maneuver units and other critical assets according to mission defense priorities. Air defense forces fight interdependently with other elements of the joint, interagency, intergovernmental and multinational (JIIM) team at strategic, operational, and tactical levels.

1-10. The ADA brigade's air defense systems contribute to a commander's operational picture providing battle awareness, visualization, understanding, and airspace control comprehension. AMD mission sets may require the ADA brigade to deploy early within a joint operations area (JOA) with tactical lift assets or strategic lift assets. The ADA brigade may operate initially under the operational control (OPCON) of the joint forces land component commander (JFLCC) or joint forces air component commander (JFACC) as brigade forces flow into a JOA. The ADA brigade will integrate with joint forces in support of the Integrated Air Defense System (IADS) and provide early warning and defense against aerial threats during all phases of the operation.

## BRIGADE ASSETS AND PRIORITIZATION

1-11. The ADA brigade primarily conducts the active defense of designated assets and forces as prioritized by the commander. The ADA brigade coordinates the operations of subordinate ADA battalions/task forces and assigned or attached units within the JOA. The ADA brigade conducts force operations and engagement operations (EO) based on the commander's intent as derived through guidance from the AAMDC.

1-12. The ADA brigade normally deploys in support of the AAMDC's regional mission. The ADA brigade defended assets may be re-designated in order to support high priority efforts or assets designated or assigned by the AAMDC.

## BRIGADE FUNCTIONS

1-13. The ADA brigade functions include mission command activities, integration, planning and liaison with joint, higher echelon units and subordinate battalions. ADA brigades are the force providers for the AAMDCs, meeting the commanders' AMD objectives. The ADA brigades are aligned under the AAMDCs and deployed in support of unified actions to control the fires of subordinate units.

1-14. Each brigade consists of a headquarters, a brigade staff, and its subordinate battalions. The ADA brigades differ in their composition, which is driven by METT-TC and their battalion configurations and weapon systems (FM 3-01). All ADA brigade functions are similar to other functional brigade staff activities in which the staffs' actions are driven by the commander's intent to guide brigade operations.

### Mission Command

1-15. Mission command is the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations. Army doctrine publication (ADP 6-0).

## Integration

1-16. The ADA brigade continuously integrates, synchronizes and executes joint fire support and can assist with targeting coordination with all joint fire support components and elements in JOA. This function is originated during the operational planning process and requires aggressive coordination and a vigorous execution of the plan.

## Planning

1-17. The ADA brigade is responsible for the planning and coordination of early warning of air and missile threats throughout their assigned area of operations. The ICO is responsible for the planning of the data links for early warning dissemination within the area of operations and JOA.

1-18. The ADA brigade executes tactical-level planning and force operations through the fire direction center (FDC) and current operations cell (plans and integration). The FDC deploys with their subordinate units to manage force operations and monitor air battle operations. The ADA brigade provides forces and capabilities in the forms of liaisons, subject matter expertise, AMD planners, and planning tools in support of a supported commander's AMD objectives.

1-19. The ADA brigade has an automated FDC that manages connectivity and situational awareness by providing mission command to the subordinate tactical command station (TCS), Information Coordination Central (ICC) and command post (CP). This ensures that even in a maneuver operation, all ADA fires will be integrated and positively controlled.

1-20. The ADA brigade commander may also serve as a deputy area air defense commander (DAADC) or as the JFLCC's theater Army air and missile defense coordinator (TAAMDCOORD). This may occur if an AAMDC is not deployed to the area of operations (AO).

## Liason with Joint Forces

1-21. The ADA brigade can establish liaisons with the necessary joint force mission command elements which includes the JFACC, JFLCC, and joint force maritime component commander (JFMCC). The ADA brigade headquarters includes a liaison section staffed with senior air defense officers who perform face-to-face coordination and integration tasks with the appropriate joint force command and control element. This section integrates with the air operations center (AOC), AAMDC, control and reporting center (CRC) or service equivalent headquarters. The principle function of this liaison section is to ensure that the ADA brigade situation awareness is fully integrated into the airspace control plan (ACP) and the procedural guidance for brigade operations.

# Chapter 2
# ADA Brigade Operations

This chapter discusses how the ADA brigade operates in unified land operations. It also discusses the environment of Army air and missile defense operations to include the human and physical dimension.

## THE OPERATIONAL CONCEPT

2-1. The Army's operational concept and contribution to unified action is unified land operations, Army seizes, retains, and exploits the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create the conditions for favorable conflict resolution. (ADRP 3-0).

2-2. The ADA brigade employs synchronized action, lethal and nonlethal effects proportional to the mission and informed by a thorough understanding of all variables of the operational environment. Unified land operations and joint counterair are at the core of ADA doctrine. The operational concept must be uniformly known and understood throughout the armed services on how air defense operates and its contributions as a joint force partner. This concept is broad enough to describe operations both current and future and is flexible enough to apply in any situation.

### AREA OF OPERATIONS

2-3. The ADA brigade's AO is normally coincident with the corps AO. The size of the brigade's area of responsibility within a JOA typically encompasses the missile engagement zone (MEZ). The brigade will support the AAMDC with planning and positioning air defense units throughout the brigade's AO. The joint force commander may retain positioning authority for ADA units and capabilities depending on missile defense priorities.

### OPERATIONAL ENVIRONMENT

2-4. The operational environment is not depicted on a map or in an operations order (OPORD), but is the basis for which drives the commander's operational concept, area threat assessment and organization of the brigade's capabilities. The operational environment includes all air and missile threats, the MEZ, air defense limitations and other operational and tactical considerations. The operational environment for the ADA brigade may also include the joint operations area, particularly in a ballistic missile defense fight.

## WARFIGHTING ORGANIZATION

2-5. The ADA brigade commander functionally organizes the force around decisive and shaping operations. The brigade contributes decisive and shaping operations through AMD providing maneuver forces freedom to successfully execute offensive and defensive tasks. The ADA brigade enables mission command and control functions for all AD units within the area of operations. Mission command and control functions include managing the brigade's sustainment operations in and around unassigned areas.

## ADA BRIGADE OPERATIONAL CONCEPT

2-6. ADA brigades are an integral part of joint force commanders integrated air defense systems, contributing to the force's ability to see first, understand first, act first, and finish decisively. Domination, exploitation, and protection of the third dimension will enable the future force to be decisive at any point on the range of military operations.

2-7. ADA is the Army's element whose primary mission is conducting land-based AMD operations. ADA operations are nested in the four AMD operational elements. These are; active air defense, passive air defense, attack operations, and mission command (FM 3-01).

- Active air defense, direct defensive action taken to destroy, nullifies, or reduces the effectiveness of air and missile threats against friendly forces and assets (joint publication [JP] 3-01).
- Passive air defense, all measures, other than active AMD, taken to minimize the effectiveness of hostile air and missile threats against friendly forces and critical assets (JP 3-01).
- Attack operations, offensive actions to destroy and disrupt enemy air and missile capabilities before, during, and after launch (JP 3-01).
- Mission command, the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of Unified Land Operations (ADRP 6-0).

# ADA COMMUNICATION SYSTEMS AND INTELLIGENCE OPERATIONS

2-8. Defeat and assessment of AMD threats require active communications and intelligence systems that rapidly link passive air defense, active air defense, and attack operations to the mission command network. This includes intelligence preparation of the battlefield, rapid early warning, mission assignment, targeting data and battle damage assessment to the appropriate joint operations AMD element. ADA planners and tactical workstations provide visualization capabilities to assist commanders and their staff in tasks such as developing the AMD, defense design, unit's operational readiness, and air space coordination. Additionally, the communication's system and intelligence must provide secure uninterrupted communications among intelligence assets, fusion and decision-making facilities, warning systems, and weapon systems.

# THE ENVIRONMENT OF ADA OPERATIONS

2-9. ADA operations occur within an environment that has both the human and physical dimensions. These dimensions however affect ADA operations are conducted and the survivability of air defense units and its Soldiers in the field.

## THE HUMAN DIMENSION

2-10. ADA operations frequently employ Soldiers in units of squad size or smaller throughout the operational area. The nature of ADA missions requires ADA Soldiers to interact directly with supported company, battalion or brigade commanders. The environment of combat, combined with unique ADA requirements, places great demands on ADA Soldiers. Their wrong decisions during an AMD battle could result in fratricide with force-wide ramifications. To meet these challenges, ADA Soldiers must be well led by ADA officers and noncommissioned officers. They must also be physically and psychologically prepared for the rigors of battle. This task must be accomplished by small unit leaders through peacetime training and Soldier development programs. In interpreting orders, ADA Soldiers must be able to perform their mission and act appropriately in difficult circumstances. Orders may come from several sources and require complex rules of engagement.

## THE PHYSICAL DIMENSION

2-11. ADA operations occur within three radically different physical environments, making them inherently complex and joint operations. These environments are as follows, ground, air and the environment of space.

### Ground Environment

2-12. Most of the effects and events of combat operations occur within the ground environment, a two-dimensional space dominated by terrain. Terrain constrains maneuver, fires, and communications. Most joint force sustainment operations and lines of communication also operate in the ground environment. ADA

operations take place within the ground environment and function to protect assets and activities within this environment.

### Air Environment

2-13. ADA operations maximize the vulnerability of enemy air attack through integrated defenses in depth. Enemy air attacks can occur on the flanks of or in the front of the corps AO. To defend the brigades AO, the integration includes adjacent ADA defenses and Air Force defensive counterair (DCA) assets. Within unified land operations (ULO), ADA defenses are deployed within areas to better protect assets and activities where the enemy is most likely to attack. ADA brigade engagement operations may also target enemy airpower on the ground by timely offensive counterair (OCA) target nominations through the corps fires cell.

### Environment Of Space

2-14. The environment of space is ideally suited for sustained communication system and intelligence operations. This provides global reach to the mission command, intelligence combat functions, and intelligence from space-based systems and conducts engagement operations against tactical missiles flying through this environment.

## EMPLOYMENT GUIDELINES

2-15. ADA employment guidelines offer AD planners options for positioning fire units based on the probability that an enemy air attack on a defended asset will follow a certain avenue of approach. For planning and positioning of ADA resources commanders must apply the six employment guidelines. The guidelines are mutual support, overlapping fires, balanced fires, weighted coverage, early engagement, and defense in depth. Which guidelines apply to a given situation depend upon METT-TC (FM 3-01), Figure 2-1 depicts AMD Tactical and Operational Objectives.

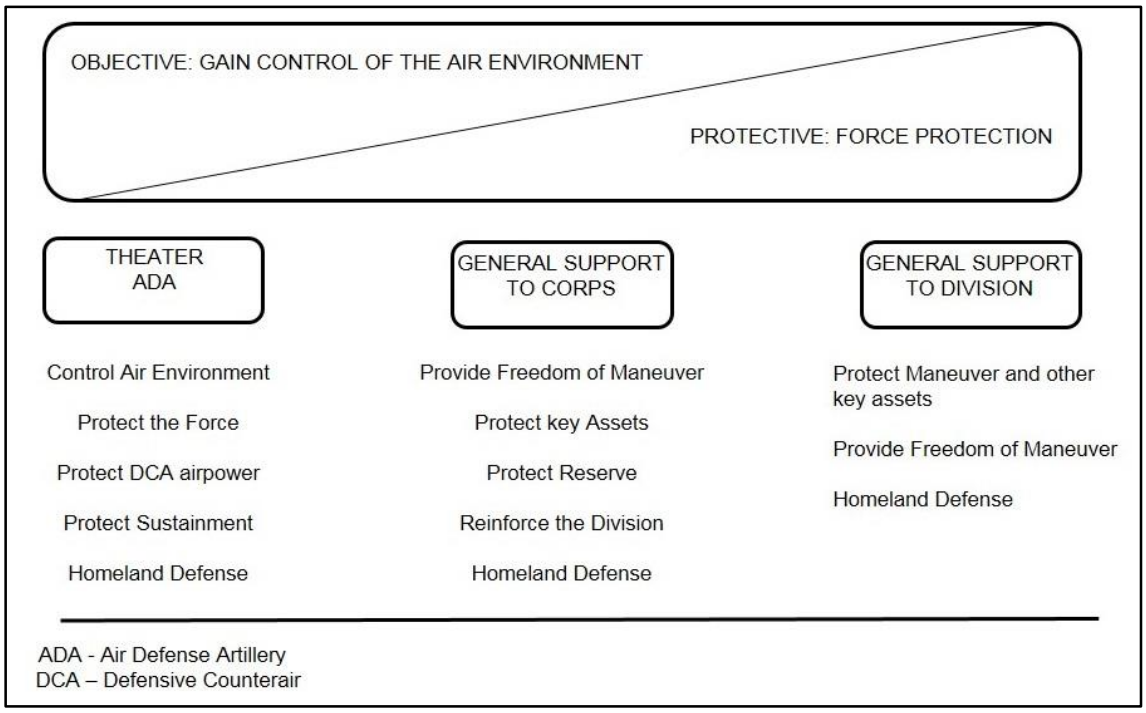



**Figure 2-1. AMD Tactical and Operational Objectives**

# ADA IN THE OPERATIONAL CONTEXT

2-16. The Joint force commander is dependent on the ADA brigade to execute offensive and defensive task in order to protect critical assets within the context of the AMD operations.

2-17. The functions of the JFACC, area air defense commander (AADC), and airspace control authority (ACA) must be integrated to ensure that joint air operations, OCA, DCA, and airspace control are fully integrated and synchronized. The ADA brigade will serve as direct support (DS) for the joint force commander (JFC) and can perform OCA or DCA for the JFC. During the joint counterair effort, a combination of the AD capabilities with the required support of other service components will make the AMD operations joint. Based on the situation, if the JFC decides not to assign the JFACC, AADC, or ACA as one individual, then close coordination between all three positions is essential.

## FUNCTIONAL MISSION COMMAND

2-18. Mission command functions are important to operational success of the ADA brigade and AMD operations. The ADA brigade will receive mission command orders from AAMDC and disseminate those orders to the battalions which are OPCON and tactical control (TACON) to the ADA brigade. This requires the integration of AMD operations into the area air defense plan.

## JOINT FORCE AIR COMPONENT COMMANDER

2-19. When functionally organized and designated by the JFC, air operations are commanded by the JFACC. The JFACC normally exercises OPCON over their own service component force and TACON or DS of other forces. The JFACC could normally be both the AADC and ACA, unless formally designated by the JFC.

### Area Air Defense Commander

2-20. The AADC is responsible to the JFC for planning, coordinating and integrating joint force DCA operations. The AADC develops the procedural and positive controls that guide active AD operations throughout the joint force, including AAMDC. The AADC may also be given OPCON or TACON of ADA assets as determined by the JFC. Depending on whether the main effort for ADA is OCA or DCA attrition, ADA brigades may be OPCON to the AADC or may support a joint support role. The JFC will define the command relationships between the AADC and other joint force component commanders.

### Airspace Control Authority

2-21. The JFC designates an ACA who has overall responsibility for establishing and operating the airspace control system (ACS). The ACA also develops policies and procedures for airspace control that are incorporated into an ACP and promulgated throughout the joint operations area as designated by the JFC. The ACA coordinates use of airspace through the ACP or rapidly implemented airspace control measures (ACM) in the counterair environment.

# COUNTERAIR OPERATIONS

2-22. The ADA brigades contribute to counterair operations, by integrating offensive and defensive operations to attain and maintain the desired degree of air superiority and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. Counterair operations will continue throughout all phases of a major operation until the air threat has been eliminated.

2-23. In the initial phases of combat operations, including entry of the forces into the joint force, the ADA brigade and counterair operations play a decisive role in protection of forces and their capabilities.

## OFFENSIVE COUNTERAIR OPERATIONS

2-24. OCA operations are conducted to destroy, disrupt, or neutralize enemy capabilities before and after launch. The preferred method of OCA operations are the countering of missile threats because they reduce

the level of the threat that defensive forces must face. OCA operations may also include the targeting of assets that directly or indirectly enable enemy airpower.

### DEFENSIVE COUNTERAIR OPERATIONS

2-25. DCA operations include all defensive measures designed to detect, identify, intercept and neutralize or destroy enemy forces to attack through friendly airspace. The goal of DCA operations, in concert with OCA operations, is to provide an area from which forces can operate while protected from air and missile threats. DCA operations must be integrated and synchronized with OCA operations and all other joint force operations.

### ADA BRIGADES ROLE IN COUNTERAIR OPERATIONS

2-26. The objective of ADA brigade operations at the tactical level is to protect the maneuver force by planning and executing the battle and engagements. ADA forces control the air environment over the corps and divisions area of operations; protect priority forces and assets from attack and surveillance, provide freedom to maneuver and destroy enemy aircraft and missiles in the air. Every participant in Army air defense, maneuver, fire support, aviation, and intelligence has a role in achieving those objectives, as do the joint forces, which support corps and division operations, Figure 2-2 depicts Counterair framework.

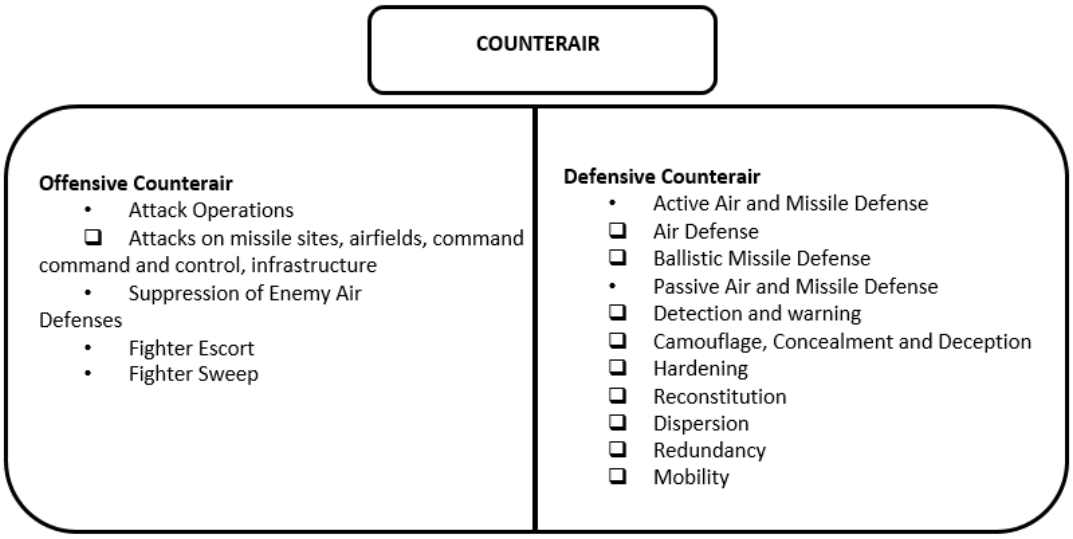



**Figure 2-2. Counterair framework**

## PRIORITIZING THE AIR DEFENSE EFFORT

2-27. The JFC identifies the main effort for air operations in terms of an apportionment decision where percentages of protection capabilities are committed to priority assets. Brigade commanders will submit apportionment recommendations to the JFC for consideration. Apportionment could affect AMD operations because the joint force air component commander may seek to compensate for a lack of dedicated DCA assets with tasking to ground ADA units. The TAAMDCOORD can develop recommendations for apportionment to be provided by the Army service component commander to the JFC.

2-28. AMD priorities, like airpower apportionment are tools used by the JFC and subordinate commanders to establish the overall priorities of effort for the joint force. At the ADA brigade level, they are described in terms of a critical combat power such as movement and maneuver, intelligence, fires, sustainment, mission command and protection. The TAAMDCOORD develops AD priorities for the commander. ADA doctrine outlines three criteria for developing AD priorities.

- Criticality: how critical is the asset and function to the operations?

- Vulnerability: how easily can the asset and function be damaged by air and missile attack or observed by aerial sensors?
- Threat: does the enemy desire to attack this asset and function?

## ADA BRIGADE SUSTAINMENT

2-29. The ADA brigade will fight in a theater or corps area and operations are affected by tactical offensive or defensive action in the corps only to the extent that these are synchronized with lethal or non-lethal efforts. The principal activities in this area of operations are sustainment, protection, and command and control functions. Enemy attacks against the rear are aimed at disrupting one or more of these activities. Therefore, the ADA brigade operates within a potential operational environment that is highly noncontiguous and where the threat includes air as well as ground forces. Ground threats to the sustainment area are categorized in three levels of intensity, while sustainment area defenses focus on protection functions.

# Chapter 3
# Mission Command

This chapter discusses the techniques for accomplishing mission command for the brigades. ADA brigade commanders must assimilate a large amount of information to visualize the area of operation to assess the situation, and direct the military action required to achieve victory.

## ROLE OF THE COMMANDER

3-1. The ADA brigade commanders function motivates and directs the force towards accomplishment of the mission. Mission command directs leaders and focuses on the accomplishment of assigned tasks and it's a continual process centered on the commander. The commanders are selected by their ability as a military leader, tactical expert and possesses the organizational skills to direct the efforts of the brigade. Depending on the mission, the commander has the authority ranging from full authority, temporary, or highly constrained authority.

## BRIGADE MISSION COMMAND FUNCTIONS

3-2. The mission command warfighting function is the related task and systems that develop and integrate those activities enabling a commander to balance the art of command and the science of control in order integrate the other war fighting functions (ADRP 3-0). Mission command is the exercise of authority and direction by the commander. Effective control ensures the implementation of commands and provides accurate situation awareness to the commander. The commander must be both a good leader and an effective decision-maker. The commander is reliant on a functional mission command system to identify decision points, to provide sound options, and to ensure the implementation of decisions.

### FORCE, ENGAGEMENT, AND SUSTAINMENT OPERATIONS

3-3. Mission command functions of the ADA brigades are grouped into force operations, engagement operations, and sustainment operations. Force operations set the conditions for success by effecting the tactical planning and execution required to make battle ready fire units available at the right place and time. Engagement operations involve the conduct and management of the air battle and the accomplishment of the AMD mission by defeating enemy aircraft and missile attacks. The ADA brigade provides sustained AMD operations through effective logistics and force projection planning and operations.

### COMMAND POST

3-4. The command post is where the ADA brigade commander and his staff perform mission command functions. Command posts are established from the AAMDC down to ADA battery. For survivability, alternate command posts are normally established at ADA brigade and battalion levels. All command posts have secure communications to higher headquarters maintaining current situation awareness regarding the status of enemy and friendly forces and applicable orders in effect. Command posts must be able to execute current and future operations and pass orders to subordinate ADA units. Command posts also have dedicated elements to implement emergency survivability measures in case of chemical, biological, radiological, and nuclear defense (CBRN) or ground attacks as well as sustainment operations.

3-5. The ADA brigade command post consists of the operations, intelligence and sustainment sections, along with the plans cell. These sections may not be collocated within the ADA brigade headquarters. The ADA brigade command post is organized with an air and missile defense planning and control system (AMDPCS) and a FDC. The AMDPCS will be used to perform FO and EO functions, while the FDC manages the AMD engagement operations and is normally collocated with the AMDPCS. Engagement operations

provide important feedback to the AMDPCS affecting current operations and future plans. The ADA brigade's command posts are located within a JOA to best influence current and future air battle operations.

## Current Operations

3-6. The current operations cell executes current force operations and maintains an accurate awareness of the current situation for the commander. This cell integrates the ADA brigade's operations section with future plans and operations functional cells. The cell also maintains constant communications with the ADA brigade liaison officer (LNO), division and JOA planners, and subordinate battalion command posts. All ADA brigade orders are issued and copies of all relevant orders and directives from higher, adjacent, and subordinate command posts are maintained here. The focus of activities are to answer the commander's critical information requirements and priority intelligence requirements.

## Plans

3-7. The ADA brigade planning cell performs current and future planning and risk assessments incorporating control measures in preparing all plans for the brigade and subordinate units. The plans cell also synchronizes ADA operations in time with other warfighting functions and adjacent forces. The ADA brigade planning focuses mainly on allocating forces to missions and on developing an AMD scheme of maneuver to maintain area coverage of the force as it maneuvers.

## Fire Direction Center

3-8. The ADA brigade FDC provides interface control, connectivity and situational awareness to subordinate battalions' fire control center. The FDC maintains positive control with both higher and lower AD mission command centers. The FDC also provides expertise and staff input concerning airspace management, ADA capabilities, mission command and control networks and operational tactics, techniques and procedures. The FDC ensures that air space control orders (ACO) are disseminated to subordinate units. The ADA brigade's ADAFCOs and LNO will be task organized from the brigade to assist the FDC with proper coordination and execution of fires as a mission command element.

## Sustainment Section

3-9. The sustainment section executes the sustainment function within the brigade to include supply, maintenance, transportation and field services support. It focuses primarily on the sustainment of AD weapon systems. It interfaces with the JOA sustainment command, area support groups, and subordinate unit logistics elements. The sustainment section coordinates logistics movements across JOA, corps, and divisional transportation routes to include coordinating ammunition resupply. The sustainment section must also coordinate with supply and transportation elements and with division ammunition officers for ammunition shipments into division sectors. Figure 3-1 shows an example of the brigade command post layout. Commanders will determine the best design for their mission and operation.

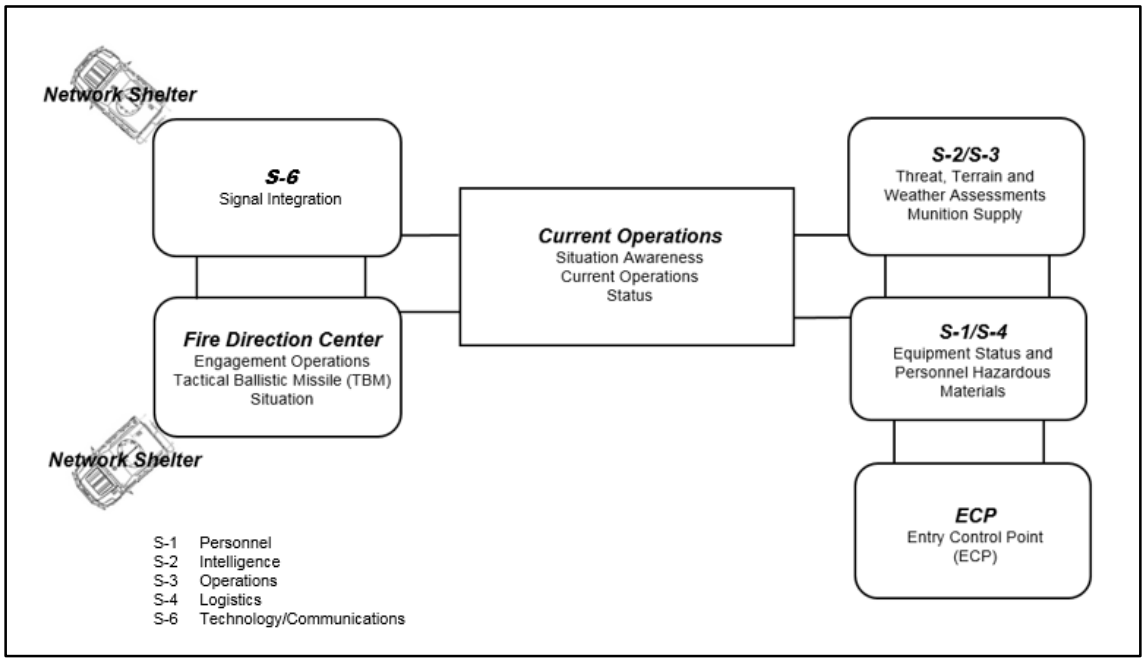



**Figure 3-1. ADA Brigade Command Post**

# COORDINATING, SPECIAL AND PERSONAL STAFF

3-10. A well-organized command post is an essential prerequisite for mission command, but the mission command process is the coordinating, special and personal staff. Coordinating, special and personal staff members are functional area experts, trained to rapidly work as a team through the staff estimate and staff planning process. The staff receives the commander's guidance and quickly provides a recommended plan of action.

# ADJACENT AND HIGHER COMMAND POSTS

3-11. When integrating AMD operations into IADS and synchronizing with corps operations, the ADA brigade must interface with many other command posts. It is important that the commander's staff understand how functions affecting AMD operations are performed in these headquarters.

## AIR OPERATIONS CENTER

3-12. The joint force command post includes a general staff element that includes an air operations center that conducts future planning and sustainment coordination which executes major air operations plan. The air operations centers mission is to develop, refine and execute the air task order. The AAMDC commander, as the deputy area air defense commander, serves the area air defense commander as the Army component mission expert for active and passive AMD operations.

## BATTLEFIELD COORDINATION DETACHMENT

3-13. Battlefield coordination detachments (BCD) are regionally focused Army elements that serve as liaison to the joint air operations center (JAOC). The ADA brigade staff may coordinate directly with the BCD on targeting plans and issues if the AAMDC is not yet in theater. The ADA brigade may provide participation to corps level targeting working groups addressing current and future threat requirements. The BCD is the conduit between joint airspace coordination and clearance of fires for AMD throughout the joint air tasking cycle. Tasks include facilitating the exchange of current intelligence and operational data, processing air

support requests, monitoring and interpreting the land battle situation, coordinating air and missile defense, coordinating airlift, and integrating airspace requirements. Figure 3-2 illustrates a notional theater JAOC.

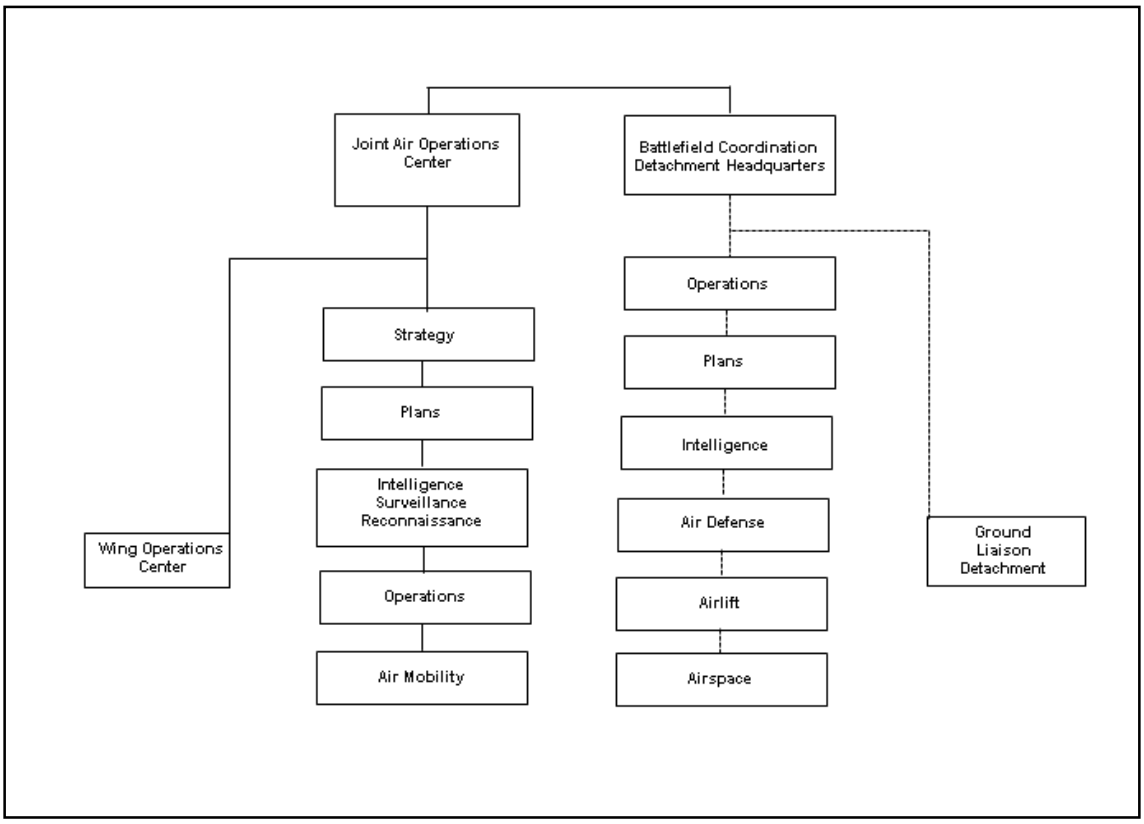



**Figure 3-2. Joint Air Operations Center Relationship (Notional)**

### LAND COMPONENT COMMANDER

3-14. A numbered Army may command up to five corps in large unit operations, the Eighth U.S. Army in Korea is an example. A field Army commander may be the Army forces commander within a joint force or task force, Third U.S. Army is the Army Forces for United States central command (USCENTCOM). Within a joint force, it could also be a functional land component headquarters commanding all land forces. In smaller operations, the corps could be the Army Forces or land component commander. In some cases, there is precedence for an Army division to be a joint task force for Army forces.

## AMD OPERATIONS AND ORGANIZATIONS

3-15. FM 3-01 outlines how the Army conducts unified land operations to prevent conflict, shape security environments, and win wars while operating as part of the joint force and working with inter-organizational and multinational partners. Confronted by decentralized, networked, and adaptive enemies in dynamic and uncertain environments, the Army must possess a versatile mix of capabilities, formations, and equipment to conduct AMD. The ADA force must deter and defeat aerial threats in support of joint campaigns and assist in achieving air superiority to assure victory in a complex world (FM 3-01).

## ARMY SERVICE COMPONENT COMMAND

3-16. The mobility and combat power of an Army corps and supporting air forces are vastly greater than their antecedents of fifty years ago. This has made the prospect of requiring an Army group headquarters

very unlikely, nevertheless, the JOA requirements for operational level support to multiple corps have remained, leading to the constitution of Army Service Component Commander (ASCC). This position was formerly termed JOA Army commander. The ASCC is also responsible for carrying out United States Army active National Guard support within a joint operations area.

3-17. ASCC roles can range from force provider in a transition to war, to operational headquarters in a force projection operation, to national support headquarters in a period of conflict. During peacetime operations, the ASCC mission is to provide trained and ready forces in support of combatant commanders. In a force projection scenario, the ASCC focus is upon receiving, assembling, and moving the Army forces quickly to its employment area of operations. In addition to logistics support, this mission may include protection. In a time of conflict, the ASCC provides the full range of operational level sustainment and tactical sustainment to the Army forces, allowing the combatant commander the ability to prioritize efforts concentrating on the land force. In all cases, the ASCC is an essential link between the combatant commander, the host nation, and the Army forces.

## LOGISTICS COMMAND POST

3-18. The ADA brigade coordinates with some or all of the command post to obtain logistics support. The ADA brigade coordinates with the expeditionary sustainment command (ESC)/sustainment ADA brigade command post for support of broad logistics support priorities and arrangements. The ADA brigade coordinates with the ESC materiel management center for supply and maintenance priorities. It also coordinates with JOA ESC or theater sustainment command for specific sustainment support and coordinates with corps and divisional movement control centers for movement and transportation support.

## CONTROLS AND REPORTING CENTER

3-19. The AADC will establish one or more subordinate mission command facilities to execute air and ADA operations. In the early stages of forcible entry operation, an airborne warning and control system (AWACS) may perform this function. The CRC will be established employing a network of highly mobile radars to accomplish their functions. These organic radars feed an air picture to the CRC. The CRC will fuse the ground radar picture, data from aerial platforms, and with intelligence information to produce a common operational picture for their sector of operations. The ADA brigades FDC may coordinate directly with a CRC to affect this link.

3-20. The JOA brigade is under the command of the AAMDC. ADA brigades can be tasked under the mission command of the supported corps commander. JOA ADA brigades follow the weapon control procedures and measures established by the AADC for conducting JOA air and missile defense. Figure 3-3 on page 3-9 shows the mission command structure for ADA brigades.

# JOINT COMMAND RELATIONSHIPS

3-21. The joint nature of AMD operations often produces multiple command relationships. It is essential that the brigade commander and staff both understand the nature of and joint concepts of mission command. Table 3-1 illustrates joint command authorities.

**Table 3-1. Joint Command Authorities**

| FUNCTION | Combatant Command | OPCON | TACON |
|---|---|---|---|
| WHO AUTHORIZES: | (a) Title 10, United States Code, section 164 (b) Secretary of Defense (SECDEF) | Next higher Headquarters (HQ) | Next higher HQ |
| WHO EXERCISES: | (a) Combatant Command only (b) U.S. Commander in a multinational command, when delegated by Secretary of Defense | Any echelon below Combatant Command | Functional component commanders over tasked forces |
| Can delegate | NO | √ | √ |
| Organize forces | √ | √ | NO |
| Assign tasks | √ | √ | NO |
| Designate objectives, establish boundaries | √ | √ | √ |
| Approve subordinate | √ | √ | √ |
| Support logistically | √ | NO, unless specified | NO |
| Direct logistic or training preparations | √ | Training: Yes Administration/Logistics: No, unless authorized | NO |
| Employ forces | √ | √ | √ |
| REMARKS: | Appropriate if forces are permanently assigned to the combatant commander | Inherent in Combatant Command appropriate if forces are temporarily attached to a Joint force commander (JFC) | Inherent in Operational control (OPCON) |
| Command exercised through subordinate | (a) services (b) functional components such as the land component commander (LCC) or air component commander (ACC) (c) Joint Task Force | (a) JFC (b) services | Directly over assigned reserved forces |
| LIMITATIONS: | Limited by legislation, department of defense policy or regulations, budgetary constraints, local conditions, and other specific conditions prescribed by the SECDEF or Chairman of the Joint Chiefs of Staff | OPCON below the JFC level usually limited by time, function, or location | Limited by time, function, or location |

## SUPPORT

3-22. The JFC may establish a support relationship by tasking one force to assist another command without relinquishing one's own authority to the other commander. Joint doctrine establishes the support relationships of general support, mutual support, DS, and close support:

- General support is the action that is given to the supported brigade as a whole rather than to a particular subdivision.

- Mutual support is the action that units render each other because of their assigned tasks, their position relative to each other, and their inherent capabilities.
- DS is a mission requiring a command to support another specific command and authorizing it to answer directly to the supported brigade's request for assistance.
- Close support is the action of the supporting unit against targets or objectives that are sufficiently near the supported brigade as to require detailed integration or coordination of the supporting action with fire, movement, or other actions.

### COORDINATING AUTHORITY

3-23. Coordinating authority is exercised at any command echelon. They are delegated to a commander or individual for coordinating specific functions and activities involving forces of two or more services, functional components, or two or more forces of the same service. The coordinating authority may require consultation between the agencies involved, but the commander does not have the authority to compel agreement, the AADC is the coordinating authority at the joint force level.

## ADA COMMAND AND SUPPORT RELATIONSHIPS

3-24. Command relationships establish the degree of control and responsibility a commander has over forces operating under control. Support relationships establish specific relationships and responsibilities between the supporting and supported units. The following paragraphs describe the types of command and support relationships that ADA units find themselves operating.

## COMMAND RELATIONSHIPS

3-25. ADA units operate in some permanent command relationship to their higher headquarters. When units are an integral part of a higher echelon unit, as established by a table of organization and equipment (TOE), they are organic. A Patriot battery, for example, is organic to a Patriot battalion. If units are made a permanent part of a higher echelon unit by Department of the Army orders, they are assigned. Commanders exercise command over assigned and organic forces as normally organized and are responsible for their administrative and logistic support.

3-26. Commanders have the authority to organize their assigned and organic forces, as the situation requires. When forces are task organized, they may be OPCON to another unit or may be attached to it. Command relationships established by task organization are limited to the duration and purpose of the operation for which .the task organization was directed. Commanders are not responsible to logistically support forces under OPCON, unless specified in the task organization order. Commanders have logistic responsibility for attached forces, unless specified otherwise in the task organization order.

## ADA SUPPORT RELATIONSHIPS

3-27. Like joint support relationships, ADA support relationships provide AD support to an element of the force without subordinating the AD unit to that element under a command relationship. Army ADA doctrine outlines four support relationships: general support (GS), GS-reinforcing (GS-R), reinforcing (R), and DS. JOA AD units may have a joint support role with the JFACC, or may be GS to an Army force. Synchronized ADA operations within corps or division may involve all of these support relationships. The following paragraphs describe ADA support relationships and some considerations in applying them.

### GENERAL SUPPORT

3-28. A general support ADA unit provides AD to the force as a whole and is not committed to any specific element of the force. ADA units usually operate under GS unless otherwise tasked. The support relationship is identified in the task organization order. This relationship is commonly used when the ADA unit protects corps elements in the division and corps sustainment areas. GS ADA units can rapidly respond to changes in either the scheme of maneuver or the air threat.

### GENERAL SUPPORT REINFORCING

3-29. A general support reinforcing ADA unit primarily supports the force as a whole and secondarily augments the coverage of another AD unit. This specific type of unit is not committed to any specific element of the force. At the corps level, corps priorities take precedence over division priorities for a unit that is general support to a division unit.

### REINFORCING

3-30. A reinforcing ADA unit augments the coverage of another AD unit. This mission differs from general support reinforcing, in that the reinforced commander approves a positioning of a reinforcing ADA unit. Divisional priorities would take precedence over corps priorities for an AD unit reinforcing a divisional unit.

### DIRECT SUPPORT

3-31. A DS ADA unit provides dedicated AMD for a specific element of the force. A unit also provides close and continuing support and coordinates its movement and positioning with the element it supports.

### COMMAND AND SUPPORT RELATIONSHIPS APPLIED

3-32. In recommending AMD missions for the ADA brigade to the corps commander, the brigade commander may also recommend the establishment of support or command relationships between ADA units. In task organizing forces, the ADA brigade commander may establish support or command relationships between subordinate units. The commander must first decide whether ADA integration requires formal coordination, next decide whether to establish a commander or a support relationship based on this formal coordination.

## MISSION COMMAND STRUCTURE FOR ADA BRIGADES

3-33. The ADA brigade is under the command of the AAMDC. ADA brigades can be tasked under the mission command of the supported corps commander. The mission command structure would not matter in regards to weapons control procedures. The brigade will always follow the measures established by the AAMDC when conducting AMD operations.

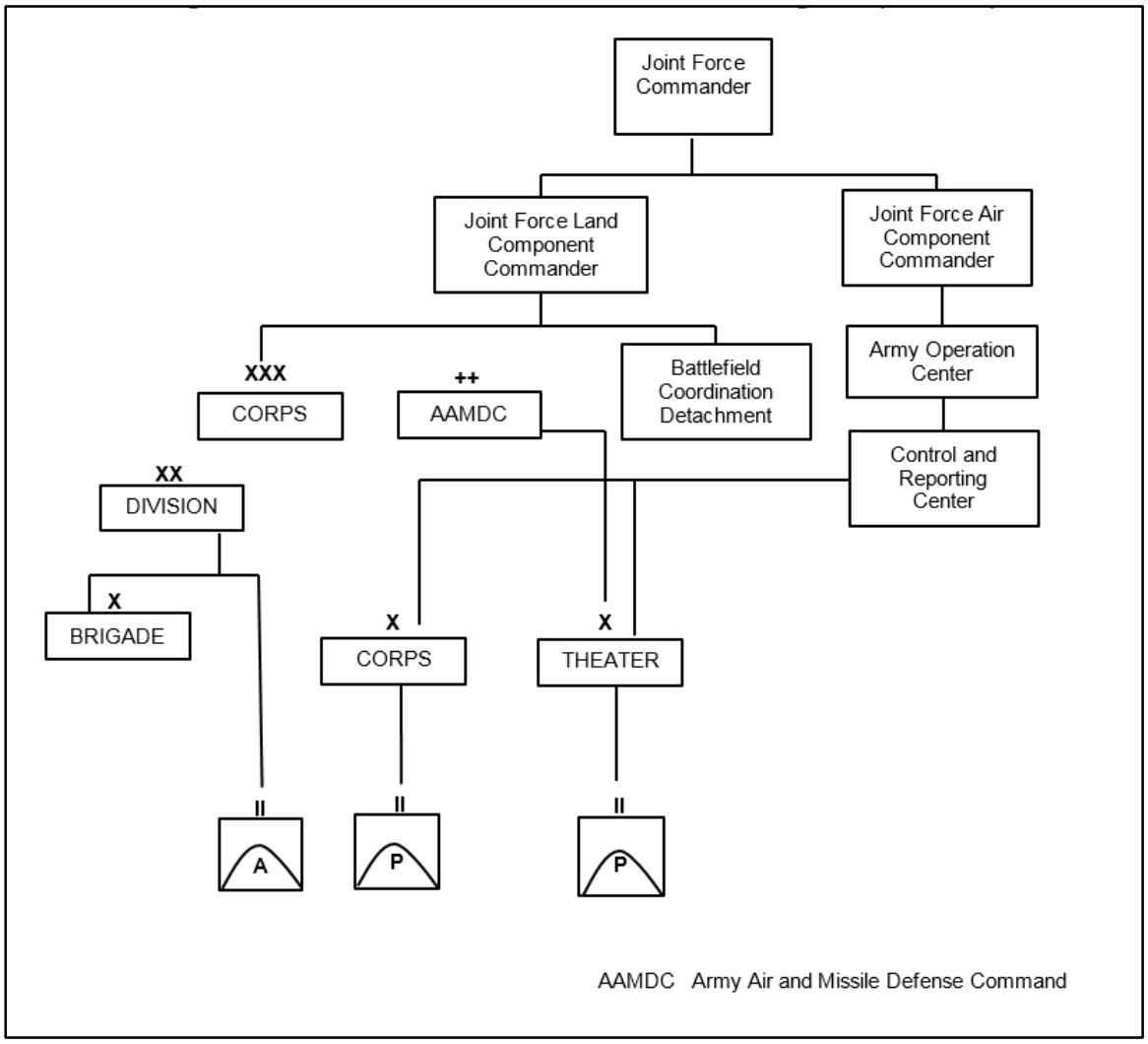



**Figure 3-3. Mission Command Structure for the Brigades (Notional)**

## CONTROL CHAIN

3-34. The joint forces commander assigns responsibility for overall AD and airspace control to designated commander. This may be any commander, but is usually the air force component commander who is both the AADC and the airspace control authority. The AADC manages by coordinating and integrating the entire counterair and active defense effort within the JOA. The AADC may create air defense regions and appoint a commander for each region or sector. The brigade may have to develop control procedures for ballistic missile defense, which also includes engagement authorities.

3-35. The regional air defense commanders (RADC) may be selected from any service component. The RADC is fully responsible for and has full authority for air defense of its region. The RADC may further designate a sector air defense commander (SADC) if required, and may delegate authority for identification and engagement of threats to the brigade. The RADC (or SADC) executes air defense operations through the CRC, or through an AWACS until a CRC arrives in the area of operations. The CRC supervises the surveillance and control activities of subordinate radar elements, provides means for air traffic identification, and directs regional AD. The CRC may also exercises engagement control through the ADAFCO for subordinate air defense units.

### COMMUNICATIONS

3-36. The commander's style may shape the structure of the supporting communications system. The commander is able to move freely about the battlefield and is electronically linked with the command post to access time-sensitive data to influence the battle. Effective mission command requires reliable signal support systems to enable the commander to conduct operations at varying tempos over extended distances. Good signal planning increases the commander's options to exploit success and facilitate future operations.

3-37. Space-based systems provide commanders with intelligence, reconnaissance, surveillance, navigation, and early warning and positioning information that facilitate mission command. Satellite communications support all ADA task forces. These space-based systems significantly upgrade the speed and accuracy of information that commanders exchange.

3-38. Tactical information must be communicated among commanders, staffs, and weapons systems. The commander must be able to communicate his intent while moving freely about the battlefield. Electronically linked with the command post, the commander must be able to access time sensitive operational and intelligence information to assess and influence the battle at the critical time and place. A seamless, secure communications network that provides horizontal and vertical integration of voice, data, graphics, imagery and video information is essential. This network supports integrated combat operations and focuses on the warfighting commander.

## AIRSPACE MISSION COMMAND

3-39. ADA sensors provide surveillance of the airspace and detect, acquire, track, classify, discriminate, and identify aerial objects from near-ground level to high altitudes. Executing the airspace control function requires a joint effort by using service airspace mission command systems as a framework for integration.

### AIRSPACE CONTROL AUTHORITY

3-40. The ACA is the commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area (JP 3-52). It segments the airspace for various airspace users. The ACA issues a daily ACP in conjunction with the JFACC air task order planning cycle. The JFLCC is normally delegated airspace management authority below an established coordinating altitude. The corps may publish its own ACO for Army aviation operations below the coordinating altitude. ADA involvement in airspace control stems from the fact that ADA weapons control procedures are directly affected by airspace control measures. The ADA brigade coordinates planning with the force airspace mission command element to influence the development of an airspace plan that meets JFC objectives and does not unduly constrain ADA operations. The CRCs and corps Army tactical command elements positively manage friendly air traffic control above and below the coordinating altitude respectively. The airspace where AD fires occur is managed, apportioned, and allocated by the JFC through the ACA. An increased number of airspace users, both friendly and enemy manned/unmanned aircraft, ballistic/cruise missiles, rockets, artillery and mortars, results in congested airspace. Because ADA commanders do not own the airspace in which they conduct engagements, they must employ air defense fires within established controls promulgated by the airspace control authority, with discrimination and accuracy, to ensure enemy targets are engaged and friendly air platforms are protected. Thus, the ability to effectively execute AMD operations requires detailed planning, coordination and control of air defense fires.

### AIRSPACE CONTROL ORDER

3-41. Army headquarters can obtain the airspace control order (ACO) from Air Force liaison elements such as the corps air support operations center (ASOC) or from Army liaison elements located in Air Force headquarters such as the BCD. The AAMDC coordinates directly with the airspace mission command element and pass the current ACO and any corps ACM to the brigade. The ADA brigade provides all relevant measures to subordinate air defense units. Air defense units ensure that all ADA

firing units are in possession of current ACO information. ACOs and ACMs are checked at every echelon for accuracy before implementation.

### AIRSPACE

3-42. The Army has fielded airspace element personnel and capabilities down to brigade level. These capabilities enable effectively integrating airspace use into operations. These capabilities are fully integrated with joint airspace control processes thereby providing the Army and joint force commanders expanded airspace control options.

3-43. Airspace Control describes the principals for airspace control, but combatant commanders and joint force commanders may implement other measures based on JOA requirements. Because AMD operations occur within the air environment, they must be synchronized with air operations by airspace control means request as well as by positive control. ADA units may require special airspace control volumes to accomplish their missions. The following paragraphs describe some airspace control means used by ADA units.

### MISSILE ENGAGEMENT ZONE

3-44. A MEZ is a weapons engagement zone (WEZ) for AMD operations. It is a defined volume of airspace where specific type of AD weapon systems are used for engagements of high priority targets. A MEZ is activated through the surface-to-air missile tactical order, which is issued by the area air defense commander or the deputy area air defense commander.

### WEAPON ENGAGEMENT ZONE

3-45. The area air defense commander uses WEZs as a fire distribution tool. DCA fighters have primary responsibility for AD within fighter engagement zones, while ADA units have priority within a MEZ. For the ADA brigade, the MEZ represents the AADC's establishment of the ADA area of operations in the third dimension of the battlefield. ADA units cannot engage outside a MEZ unless the rules of engagement apply or in self-defense. The MEZ serves as a 'notice to Airmen's' warning to aircraft that engagement operations are ongoing.

3-46. For JOA ADA units OPCON to the area air defense commander, the MEZ may be allocated in conjunction with an area defense mission order. For ADA units, the MEZ is not a mission but an AO. It continuously adjusts to encompass mobile ADA defenses. The Air Defense Airspace Management (ADAM) Cell coordinates through ADA channels to plan a phased sequence of MEZs, normally coinciding with boundaries and the forward/rear limits of ADA coverage. The BCD ensures that MEZ requirements are incorporated into the ACO.

### WEAPONS FREE ZONE

3-47. A weapons free zone is a volume of airspace where the governing weapons control status is weapons free. Weapons free can apply generally or can apply to a specific air platform. ADA commanders often desire a weapons free zone because it simplifies the target identification problem and speeds the engagement process. Fratricide is a major consideration, however, in determining the advisability of a weapons free zone. The force commander must weigh the risks of losing close air support in the designated area against the risks associated with enemy air attacks. If the commander is relying mainly on rotary wing aircraft for aerial fire support, then a weapons free zone for fixed wing aircraft may be feasible. If the enemy can achieve air superiority over the force, then a weapons free zone over a critical asset may be advisable.

## JOINT BATTLE SYNCHRONIZATION

3-48. Control is inherent in command. To control is to regulate forces and functions to execute the commander's intent. The commander establishes positive controls and procedural controls to regulate

the execution of the operation. Together with a clearly stated commander's intent, effective controls are vital for decentralized execution of operations. A mix of positive and procedural controls governs ADA

3-49.

3-50. units. Procedural controls include rules of engagement, airspace control orders, hostile criteria, and weapons control status, surface to air tactical orders, and other more general orders. The AADC is the joint force authority for promulgating positive and procedural control measures.

## POSITIVE CONTROL

3-51. Positive control provides a means to put (eyes) on a target, to order engagement by a specific fire unit and to monitor the engagement. Positive control is a method that relies on positive identification, tracking of airborne objects and control of fires within an airspace conduct by an agency having the authority and responsibility therein. A common operational picture that synthesizes data from multi-service intelligence and air defense sensors enables positive control. Positive control also correlates air tracks, and identifies them based on an integrated airspace control plan and established identification criteria. Positive control may be exercised through fire control orders.

## PROCEDURAL CONTROL

3-52. Procedural control is a method that relies upon a combination of previously agreed and promulgated orders and procedures. Procedural controls include; air defense warnings, rules of engagement, airspace control orders, published identification criteria, and weapons control status.

## AIRSPACE CONTROL

3-53. Control of airspace is a protection function, centrally directed at the joint force level by an appointed airspace control authority. Efficient use of airspace maximizes friendly air maneuverability and facilitates ADA identification and engagement operations.

## RULES OF ENGAGEMENT

3-54. Rules of engagement are positive and procedural management directives that specify the circumstances and limitations under which forces will initiate or continue combat engagement with enemy forces. The joint force commander approves the theater rules of engagement. These established rules enable the area air defense commander to retain control of the air battle by prescribing the exact conditions under which engagements may take place. Rules of engagement apply to all warfare participants in the theater and are disseminated to all echelons of air, land, and sea forces.

## WEAPONS CONTROL STATUS

3-55. A weapon control status prescribes the relative degree of control of ADA fires. Weapon control statuses (weapons free, weapons tight, weapons hold) may be applied to weapon systems, volumes of airspace, or types of air platforms. The degree or extent of control varies depending on the tactical situation. ADA units will normally be governed by a mix of positive and procedural controls that will vary by the weapon system.

## WEAPONS ALERT DESIGNATORS

3-56. Weapons alert designators provide commanders guidance on the percent of fire units that must be at various states of readiness. These states of readiness may be defined in terms of readiness to fire or readiness to move and specific criteria for each should be established in the brigade tactical standard operating procedure. Weapons alert designators are equally applicable to ADA units, though the state of readiness may differ. Weapons alert designators are issued in the brigade OPORD and managed by battalion commanders.

### AIR DEFENSE WARNING CONDITION

3-57. Irrespective of overall force readiness, air defense warning conditions establish the commander's estimate of the probability of near term air attack. The area air defense commander establishes the baseline air defense weapon for the joint force. Subordinate air defense commanders may issue a higher but not lower air defense warning condition for their area of operations. Air defense warning conditions are disseminated to all ADA elements and fire units.

## MULTINATIONAL OPERATIONS

3-58. Large scale U.S. military operations will often be multinational operations, conducted with the military forces of other nations toward a common purpose. Existing multinational structures are evolving toward multinational integration at lower levels. The ADA brigade may be required to integrate with adjacent multinational ADA headquarters into a multinational mission command structure. A combined joint force may be organized around an alliance like North Atlantic Treaty Organization (NATO) or a more ad hoc and temporary coalition. A corps joint task force might also be a combined joint task force. An important task in combined ADA operations is to minimize the impact of differences in language, national doctrine, training, organization, and equipment on the combined force operation. This can be done through effective liaison, well coordinated planning, and clearly articulated joint force goals and intent.

### COORDINATION

3-59. To effectively plan and fight the AMD battle, coordination must be accomplished between the following organizations:

- The AAMDC to the JFC, host nation, allies JFACC, AADC, ACA, JFLCC, Army Forces commander, BCD, ADA brigades, and ADA battalions.
- The ADA brigade to the AAMDC, AADC, ACA, CRC, JFLCC, Army forces Commander, and subordinate ADA battalions. If the AAMDC is not present, then the JOA brigade coordinates as the AAMDC.

### LIAISON REQUIREMENTS

3-60. Liaison is essential in multinational and joint operations. Liaison personnel must be familiar with the staff and operational organizations, doctrine, and procedures of the force with which they will work.

### JOA ARMY AIR AND MISSILE DEFENSE COORDINATOR

3-61. The commander of the highest echelon Army air defense command in the JOA can, by exception, acts as the JFLCC TAAMDCOORD. This could be the commander of an ADA brigade, or the AAMDC. The TAAMDCOORD serves as the JFLCC's principal advisor and coordinator for JOA counterair and JOA missile defense operations. The TAAMDCOORD performs the following functions:

- Acts as the TAAMDCOORD to the JFLCC, the JFACC, and the AADC.
- Ensures that the Army is an integral part of joint counterair and active missile defense operations and planning at JOA level.
- Participates in the deputy chief of staff for operations (DCSOPS) planning cells and assists in developing Army OCA and DCA input to the air operations plan as a special staff officer to the JFLCC.
- Participates in the integration of Army AMD operations.
- Participates in the AADC's DCA planning as an Army ADA representative to the JFACC.
- Ensures that air and missile defense requirements are integrated into joint counterair and AMD planning.
- Contributes the majority of the joint force surface to air missile forces.
- Deploys forces in both the combat and communications zones and influences tactical operations by shifting the ADA force between these two areas based on the concept of operations.

# ADA OBJECTIVES

3-62. The ADA objectives focus on preserving combat power while repelling aerial threats, gaining the initiative, and supporting the offense. Air and missile defense objectives are the same for established JOAs as they are for force projection operations. Joint counterair and ADA brigade air and missile defense participants fill various roles to achieve these objectives. The ADA objectives include JOA missile defense, air breathing missile defense, and surveillance planning. The specific JOA missile and air defense and surveillance planning objectives are described below.

## JOA MISSILE DEFENSE

3-63. The purpose of the AMD is to counter the ballistic missile threat by coordinating and integrating the four operational elements of AMD into cohesive and coherent combat operations. Army JOA missile defense operations provides more details of the Army's AMD operations. Army AMD requires strategic, operational, and tactical intelligence information to accomplish interception of missiles in the upper tier. The purposes are achieved by:

- Deterring hostile nations from employing JOA missiles.
- Deterring launch of JOA missiles against U.S. forces, U.S. allies, and other strategically important countries including areas of vital interest.
- Protecting U.S. forces, U.S. allies, other important countries, and areas of vital interest from JOA missiles launched against them.
- Reducing the probability of JOA missile attacks, and minimizing the effects of damage caused by them.
- Detecting, warning of, and reporting enemy JOA missile launches.

## AIRCRAFT DEFENSE

3-64. The purpose of aircraft defense is to accomplish destruction of rotary-wing (RW), unmanned aerial system (UAS), cruise missile (CM), and fixed winged (FW) and all types of air breathing threats. The aircraft defense design must also be integrated with AMD, air breathing threat defense includes the following:

- Detection of potential threat (UAS, RW, CM, FW).
- Identification of unknown objects.
- Interception of enemy forces.
- Destruction or nullification of enemy weapons.
- Surveillance planning.

3-65. The surveillance planning objectives are required for the surveillance role. These planning objectives are provided below:

- Strike the enemy as soon as possible.
- Subject the enemy to pressures of increasing intensity of forces and diversity of weapon systems as the target approaches the engagement zone.
- Keep the enemy under surveillance and attack as long as it remains threat.

## COMBAT OPERATIONS

3-66. In combat operations, the joint task force may decide to shift to cover its primary task. This point in time may be predetermined and stated in the mission plan or it may be tied to specific enemy actions. Employment options are affected by friendly forces on the ground, the type of terrain, and the disposition of the enemy. As the operations begin, the commander assembles sufficient combat power to win the decisive victory.

3-67. The combat operations supported by the ADA brigade require the movement of forces forward to support the attack. This provides maximum ADA protection to the corps while in the offense. The ADA brigade coordinates with the corps to ensure that the ADA protection of the joint operations area is not

degraded by corps units moving forward. During combat operations, the ADA brigade conducts offensive, defensive, and other tasks detailed in subsequent chapters of this manual.

# WAR TERMINATION AND POST CONFLICT ACTIVITY

3-68. Successful combat operations are designed to bring an end to war. When a cessation of hostilities or a truce is called, deployed forces transition to a period of post conflict operations. This transition can occur even if residual combat operations are still underway in parts of the joint operations area.

## WAR TERMINATION

3-69. War termination results when the combat force takes up defensive positions. These defensive positions could be contiguous or noncontiguous.

## POST CONFLICT ACTIVITY

3-70. The ADA brigade participates in restoring order. It actively maintains its mission of providing protection to the JOA from the BM threat and air breathing threats. The ADA brigade begins preparing selected ADA units for redeployment. The post conflict period could also address activities identified as civil support operations and stability operations.

# RECONSTITUTION AND REDEPLOYMENT

3-71. This phase's objective is to redeploy no longer needed assets. Redeployed forces may be sent back to the Continental United States (CONUS) or prepared for deployment to a new station or JOA. The redeployment is supported by reconstitution activities. Both activities require planning to include the allocation of lift support, accountability, and packaging. Redeploying forces require protection.

## RECONSTITUTION

3-72. The ADA brigade reconstitutes its assets during decisive operations. Reconstitution also occurs at war termination and before redeployment.

## REDEPLOYMENT

3-73. ADA brigade assets redeploy in parallel to the drawdown of the corps. Protection against enemy air attacks is provided throughout the redeployment.

# DEMOBILIZATION

3-74. Demobilization must be planned and executed. The demobilization must meet the commander's intent and air defense focus. Redeployed units to the CONUS that are identified for demobilization require the following activities:

- Personnel and equipment are checked.
- Personnel will be returned to the civilian life.
- Equipment will be inspected and properly classified.

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## Chapter 4

# Joint Operations Area (JOA) Defense Artillery Operations

This chapter describes the techniques of employing ADA brigade in combat operations. AMD combat operations doctrine supports Army operations in protection of the force. Freedom to maneuver without interference from enemy air and missile attack, protection from reconnaissance, surveillance, and target acquisition is the mission of the ADA.

## JOA OPERATIONS

4-1. The ADA brigade must be flexible to meet the demands of ADA throughout the range of military operations. During time of peace, the brigade must train to meet the operational challenges of the mission in all environments of war and other military operations.

## JOA PLANNING

4-2. The brigade commander begins by integrating ADA forces into forces already in the JOA. The brigade commander must also coordinate operations with those at the joint task force or subordinate unified command level.

### ORGANIZING THE JOINT FORCE OPERATIONS

4-3. The joint force commander establishes a JOA command structure including command and support relationships, and a joint operational environment framework. The joint force commander also develops a joint force strategy and major operation plan. This consists of an operational level concept, which arranges a sequence of symmetrical and asymmetrical tactical actions to reduce the enemy's will to fight.

### EXECUTIVE OF SERVICE OR COMPONENT OPERATIONS

4-4. Service and component commanders, such as the Army forces commander and the JFACC, sequence battles and tactical operations to meet the combatant commander intent for a major operation. This sequencing extends from deployment operations into the joint operations area through all phases of the major operation.

### ORGANIZATION FOR SUSTAINMENT

4-5. The Army operational-level commander establishes support and coordinating relationships with the host nation and with multinational forces. Service commanders establish a sustaining base to sustain their forces in support of the major operation plan. The command provides reception, staging, operation and force integration and protection of deploying forces as they arrive in the operational area. This may be accomplished by a tactical or operational headquarters such as a field Army, or by an ASCC for Army forces. The ASCC additionally establishes linkages to joint, multinational, interagency, non-governmental, or United Nations operations.

### OPERATIONAL PROTECTION

4-6. The commander conserves combat power through operational protection means. Centrally planned operation security and deception operations protect essential elements of friendly information and conceal key capabilities and dispositions. The commander will also implement sustainment area physical

security means, including hardening of key facilities and mission command nodes, organizing a rear operations plan which supports the joint sustainment area plan. Operational protection includes ADA for the area of operations and key assets, which is accomplished by joint or combined defensive counterair and ballistic missile defense.

## DEPLOYMENT ABILITY

4-7. The brigade must be capable of rapid strategic and intra- deployment to support entry operations and operational maneuver. ADA battalions maintain the training proficiency to deploy by strategic airlift or sealift. They must be trained to deploy by road or rail over long distances. The brigade coordinates with the ASCC for the force tailoring and sequencing of units and capabilities in the deployment planning process. The brigade coordinates to ensure the integration of its elements into the time-phased force deployment list. Additionally, it conducts employment planning with the gaining command.

## INTEGRATION

4-8. The brigade must be well integrated throughout all phases of a major operation. Integration is achieved procedurally through the current operations and plans integrating cells. In execution, the brigade is integrated through positive and procedural means.

## LIAISON

4-9. Integration requires the early deployment of LNOs to higher headquarters. During AMD operations, liaison teams may be required at the following locations: adjacent brigade headquarters, CRC, the JFACC AOC, and the JFC. The brigade develops a liaison concept of operation and identifies LNO augmentation requirements during the planning process.

## MISSION COMMAND CONNECTIVITY

4-10. The brigade mission command requirements include; receiving a common operational picture from a control and reporting center equivalent, mission command links to higher and subordinate headquarters, and integration with strategic ballistic missile warning/intelligence systems. ADA battalions may be widely dispersed within a joint operations area. The brigade must be proficient in establishing connectivity with aerial and ground mission command nodes of various services and in some cases with multinational systems. Joint signal assets must also be provided to the ADA brigade.

## OPERATIONAL-TACTICAL AGILITY

4-11. As the Army level TAAMDCOORD, the brigade commander makes ADA priority and mission recommendations to the commander. AMD missions at this level may have operational significance by protecting joint operations area level sustaining bases, military or political headquarters, or ports of debarkation. Enemy attacks of these assets will be undertaken with operational level air or missile weapons for operational or strategic objectives. The TAAMDCOORD assists the Army commander in making AMD and airpower apportionment recommendations to the JFC. The TAAMDCOORD is responsible for integrating and synchronizing adjacent AD operations within the area of operations.

## JOA MISSILE DEFENSE

4-12. The Patriot missile system is a joint force weapon capable of engaging ballistic missiles in their terminal phase of flight. While providing ballistic missile, Patriot units do provide ballistic missile defense, but are primarily oriented on defense of a mobile corps against air attack. If the enemy has nuclear or chemical capability, effective ballistic missile defense directly supports units at the operational and strategic level.

# THE CONCEPT OF OPERATIONS

4-13. The ADA brigade is required to perform many different types of operations. Its mission and weapons systems are described in the following paragraphs.

## BRIGADE WEAPONS

4-14. The task organization of the brigade is more dependent on the situation of the mission. The brigade can include a mix of AMD battalions Patriot, CRAM and *Terminal High Altitude Area Defense* THAAD.

## OPERATIONAL CONCEPT

4-15. Complete coverage of the JOA rear is beyond the capability of an ADA brigade although; the brigade has the only weapons systems capable of engaging ballistic missiles. JOA assets are typically larger and less mobile than corps and divisional assets. If additional ADA brigades are not available, the brigade employs its defenses of critical JOA assets and relies on the AADC to defend the JOA rear. BMD operations are the main effort for JOA operations, because of its unique BM defense capability.

## OPERATIONAL AND TACTICAL ADA SUSTAINMENT

4-16. The brigade operations may directly be in support of defensive counterair, defending operational level fire and maneuver, reinforcing tactical level AMD operations, or to provide ballistic missile defense of critical assets and activities. The joint AMD planner applies the same planning methodology, as do the corps and divisional counterparts in developing the ADA plan. The more static nature of joint operations means that mobility as a passive air defense means is not normally an option. Therefore, ADA mobility is less important to the AMD planner than a strong ADA defense design.

## DEFENSE DESIGN CONSIDERATIONS

4-17. Defense design in support of defensive counterair operations begins with analysis of the threat to the defended asset. Threat attack options in terms of weapons systems and avenues of approach determine the brigade's allocation and disposition of ADA fire units as well as the shape of the brigade defense design. For AMD defenses, adjacent ADA to the flanks and rear of Patriot coverage is essential in cases where less than a battalion is involved. At brigade level, defense design must also consider airspace restrictions, such as base defense zones or low level transit routes. The TAAMDCOORD coordinates airspace with the Army Forces and air control authority to minimize the impact on ADA operations. The brigade should also provide guidance on emissions control in support of the Army commander's concept for OPSEC and deception. Battalion defense design positions fire units using ADA employment guidelines and weapon system characteristics. In cases where the unit may receive different types of missile munitions, ADA battalions adjust defense design and the distribution of ammunition to position more ammunition that is capable where it is most needed.

## JOINT MISSILE DEFENSE

4-18. BMD is inherently a joint mission. Joint force components, supporting combatant commanders and multinational force BMD capabilities must be integrated. They have the common objective of neutralizing or destroying the enemy's BM capability. BMD must be integrated and support the JFC's overall concept of operations and major operation objectives.

## .BALLISTIC MISSILE DEFENSE PRIORITIES

4-19. BMD priorities must address critical data/voice links. These are required for an integrated and coordinated operation. Further priorities are the detection, warning, and reporting of BM launches, and the coordination and integration of multifaceted responses to the BM attack. BMD priorities seek to reduce the probability of damage and or minimize the extent of damage caused by a BM attack.

### AMD MISSIONS

4-20. THAAD and Patriot missile systems, possibly augmented by Aegis cruisers or destroyers, provide a two-tier defense for selected high-value assets. The two tiers provide a near impenetrable defense, deny the enemy a preferred attack option, and support joint and corps battles. THAAD will provide the upper tier defense against medium- and short-range ballistic missiles, while Patriot and Aegis will provide the lower tier defense against short-range ballistic missiles, cruise missiles and air-to-surface missiles. Patriot will also have the capability to engage air breathing threats.

### TACTICAL ADA REINFORCEMENT

4-21. Reinforcement of ADA is always a possible mission for the ADA brigade and may frequently be an explicit contingency. Since corps are normally assigned ADA forces through a task force, reinforcement may be in the form of a support relationship established between an adjacent brigade and battalion.

## AIR DEFENSE PRIORITIES

4-22. Air defense priorities during maneuver operations of a corps could be petroleum, oil, and lubricants stocks, resupply locations, and ammunition supply points.

### THREAT LEVELS

4-23. There are three threat levels security forces must be trained, organized, and equipped to properly execute. Base and base cluster security against Level I and II threats, and if required, be prepared to engage Level III threats and conduct a combat handover to a tactical combat force. Level III threats necessitate a decision to commit a tactical combat force or other significant available force to counter the threat. This threat level is beyond the capability of base and base cluster defense and response forces.

### REAR SECURITY TASKS

4-24. Rear security requires not only well-coordinated defense plans, but also good threat intelligence, aggressive local patrolling to intercept the threat, and a highly mobile response force to handle sustainment area attacks. Positioning of units in the rear should incorporate a threat template so that units do not locate near enemy avenues of approach or drop zones.

### MISSION COMMAND OF SUSTAINMENT OPERATIONS

4-25. A joint security area is a specific surface area designated to facilitate protection of bases. The joint force commander will normally designate joint security area to ensure the security of base, base clusters and lines of communications. The joint force commander may retain control of joint special operations and may coordinate them through the joint force operations directorate , or may designate the joint force land component commander or joint force maritime component commander as an area commander with joint security responsibilities. To facilitate joint special operations, commanders should establish a joint security element. The individual who normally leads a joint security element is referred to as the joint security coordinator. In a low-threat environment, the JFC will normally designate joint security coordinator responsibilities within the joint staff. In this environment, the inherent defensive capabilities of bases, units, or host nation forces are generally adequate to deter the threat. In high-threat environments, the JFC normally designates a joint security coordinator to provide a dedicated focus on joint security operations within the joint security area. Under these circumstances, the joint force commander normally designates a component commander with the appropriate capabilities and force structure to perform this function. The JFC considers mission requirements, force capabilities, the nature of the operating environment, and the threat in making the designation. The joint force land component commander tasks a maneuver enhancement ADA brigade to coordinate support area operations for Army forces. Encompassing several tenant units, local defenses are organized around base clusters. The joint force commander or a service component commander with area responsibilities tasks selected commanders to function as base cluster commanders and to organize the defenses of these clusters.

## THE BRIGADES ROLE IN REAR OPERATIONS

4-26. If the commander is also a base cluster commander, he may establish a separate operations center to organize the rear battle effort within the cluster. This will involve a combination of staff and liaison officers from other tenant units within the base cluster. The brigade will establish reporting requirements for base clusters and tenant units. Tenant units as well as base cluster commanders must coordinate movements within the sustainment area to maintain the integrity of sustainment area defenses. The brigade provides an air defense element to the joint operations center to assist in planning and alert the force of sustainment area enemy air insertions.

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## Appendix A

# AMDPCS Operations

This chapter provides the techniques and guidelines for the employment and use of the Air and Missile Defense Planning and Control System (AMDPCS). AMD provides protection for the force and selected geopolitical assets from aerial attack, missile attack, and provides surveillance. Commanders and staffs are now able to use automated capabilities of the AMDPCS to plan missions, direct forces, allocate resources, and collect and process intelligence information. The AMDPCS at the brigade will serve as the Army's ADA mission command interface to the joint community.

## AMDPCS SYSTEM

A-1. The AMDPCS system will provide commanders and staffs with fully automated capabilities to enhance the execution of air defense force operations and engagement operations. It will be comprised of a set of modular, reconfigurable and standardized vehicles, shelters, automated data processing equipment, tactical power, communications, and environmental control equipment. AMDPCS is upgradeable and based on common hardware and software.

A-2. The AMDPCS assists in the performance of mission command functions, by providing the commander and staff with information dominance necessary to assess the situation, decide on a course of action, and direct forces. The system automatically collects, processes, sorts, categorizes, correlates, stores, and displays air track and mission command information. Via simulation, staff assists in the development of courses of action and war gaming in order to support the commander's decision making process. It provides the commander a reliable data communications network with which to distribute decisions, orders, plans to superiors, subordinates, and the supported force.

### DESCRIPTION

A-3. The AMDPCS components will be designed for use with variants of the Army modular command post system, and be transported by standard vehicles appropriate to the mission and mobility requirements of the supported unit. The reconfigurable nature of the AMDPCS system design provides an inherent jump tactical operations center capability to support limited AMDPCS operations during deployment, early entry or lodgment phases of force projection operations, or during reconstitution, redeployment, and movement execution on the battlefield. Appropriate configurations of the AMDPCS will be fielded at all echelons from the lowest echelons of the air defense platoon, sections, and fire units through the brigades and the AAMDC or elements thereof.

### SYNERGISTIC APPROACH

A-4. The AMDPCS is the focal point for air and missile defense planning and unity of effort within the contingency joint area of operations. It provides the sole means of horizontal and vertical integration with joint forces. It facilitates the coordination and synergism of all air defense elements on the battlefield, from the AAMDC to the air defense platoon and sections. This is accomplished by assisting the commander in the performance of the following functions:

- Mission command.
- Force operations.
- Engagement operations.

- Liaison officer functions.

## AUTOMATED ENGAGEMENT AND FORCE OPERATIONS FUNCTIONS

A-5. The AMDPCS fully automates the functions of force operations and engagement operations. Force operations are those functions required to plan, coordinate, sustain, and synchronize the air, land, and sea battle. It involves the preparation and positioning of friendly forces for maximum exploitation of enemy weaknesses. It includes the horizontal and vertical exchange of operational environment situational awareness and mission command information within air defense, as well as with other battlefield forces. Situational awareness information involves the continuous position/location updates of key operational environment elements. Mission command information includes maps, maneuver graphics, personnel, intelligence, operations and logistic information necessary to plan and synchronize combat operations. Force operations functions are accomplished to different degrees at each AMDPCS level and location. The functions associated with force operations include

- Mission planning.
- Limited collection and dissemination of intelligence.
- Processing tactical and administrative data.
- Displaying information.
- Directing forces.
- Managing resources.
- Providing/displaying operational environment situational awareness.

A-6. Engagement operations are those actions required to defeat/deny the aerial threat. They include the process of employing sensors, detecting/classifying/identifying aerial platforms, sending air defense warnings to posture air defense forces, and providing alerts/cueing to support engagements. The AMDPCS supports engagement operations by providing a real or near real-time picture of the airspace. The functions associated with engagement operations include:

- Netting sensors.
- Correlating air track information.
- Assessing threats.
- Directing and controlling engagements.
- Geographical filtering of air tracks.
- Displaying air situation.
- Identifying aerial platforms.
- Warning, alerting, and cueing.

A-7. By automating the above functions, the AMDPCS will allow air defense forces to detect, acquire, and identify friendly and threat aerial platforms earlier and at far greater ranges, which reduces the chances of fratricide. AMDPCS also has the capability to warn the joint force of impending aerial threats. AMDPCS receives and correlates track data information from higher echelon and subordinate air defense sensors. It processes and distributes relevant data to AD mission command centers, and disseminates engagement and mission command information. This provides for horizontal and vertical integration of the joint or combined forces from the division to all air defense echelons.

## AMDPCS CONFIGURATION

A-8. AMDPCS is comprised of four main elements, the S2/S3 current and future operations cell, the fire direction center, S1/S4 sustainment cell, and the alternate command post. The AMDPCS directs the brigade's tactical operations. This layout is flexible and tailorable meaning it may change due to terrain limitations and operational requirements. Each section within the AMDPCS will continuously monitor their respective functional areas.

## CURRENT AND FUTURE OPERATIONS CELL

A-9. The S2/S3 current operations cell provides a working area for processing operational message traffic and informational displays related to air defense operations. It includes separate operations and intelligence maps, CBRN status maps, weapon system status boards, and AD operations status boards. To monitor the air battle, an air and missile defense workstation (AMDWS) are installed in the battle captain's work area. This allows the commander and operations officer to monitor the common air picture as displayed in the fire direction center.

A-10. The S2/S3 future operations cell provides a working area for the brigade staff to plan and coordinate future operations. They have an AMDWS display to analyze current enemy tactics and perform trend analysis of past enemy actions. In addition, the future operations cell can perform simulations to determine the best courses of action to implement in order to optimize the defense against the expected enemy actions. It also contains the data processing equipment to publish and distribute the commander's decisions, orders, and plans to higher, adjacent, and subordinate units.

A-11. The Intelligence section has an all source analysis system workstation in both the current and future operations areas for receiving and disseminating intelligence related messages. They maintain the enemy order of battle situation maps and other appropriate data.

A-12. The brigade CBRN cell consists of a maneuver control system terminal, a CBRN analysis computer, secure voice communications to subordinate CBRN cells, a tactical CBRN plotting map, and a working area for processing CBRN information received from units.

## FIRE DIRECTION CENTER

A-13. The FDC is manned and operational on a 24-hour basis continuously monitoring the operational air picture. The commander maintains control of AD units participating in the air battle from the FDC. The tactical director (TD) and tactical director assistant (TDA) use an air defense systems integrator (ADSI) workstation to monitor and control the on-going air battle and perform management by exception.

- The FDC is the senior engagement and controlling authority within the brigade. The FDC, when acting as the engagement authority, directs or rejects engagements for units unless there is a total loss of communications to subordinate units.
- Situations may require that individual fire units be directly controlled by the brigade FDC.

## S1/S4 SUSTAINMENT CELL

A-14. The S1/S4 sustainment cell performs the functions of human resources and logistics management by using common hardware and software II equipment. The software is linked to elements of the mission command and sustainment support systems.

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## Appendix B

# Air Defense Artillery Fire Control Operations (ADAFCO) Organization and Operations

This appendix outlines the Air Defense Artillery Fire Control Operations (ADAFCO) that integrates United States Army ADA operations into the joint integrated air defense system (JIADS). They are the single point of contact between land-based ADA fire direction centers and the identified joint air and missile defense (AMD) mission command units. The primary focus of this appendix is the preparations, planning, and execution of the ADAFCO deployment to the designated receiving AMD mission command unit and the subsequent ADA control once the elements have completed integration.

## ADAFCO

B-1. The ADAFCO is the Army's ADA fire control officer at the RADC or SADC. The ADAFCO is the center of gravity for integrating Army air and missile defense operations into the joint integrated air defense systems. The ADAFCO serves as the missile control officer for Army air defense weapon system engagement operations and is under the direct control of the higher echelon unit senior weapon's director. ADAFCOs are experienced senior tactical control officers and battalion tactical directors. The ADAFCO is responsible for coordinating and executing air defense for designated assets/areas based on the defended asset list. The ADAFCO coordinates track identification correlation information with the RADC/SADC and directs all U.S. Army ground based air defense fires as well as monitoring ADA unit's status in support of RADC/SADC situation awareness. Depending on the location of the RADC/SADC, ADAFCO may be placed within the CRC, AWACS, multinational air operations center, AEGIS Combat System, or the tactical air operations center. Once embedded within one of these organizations, they provide assistance for the rapid engagement of airborne targets/platforms, deconflict and control ADA engagements, provide friendly protect functions, fratricide prevention, and assist in the surface-to-air fight. ADAFCOs operate a console organic to the RADC and SADC mission command node to conduct track identification correlation, and perform engagement operations. They will use both voice air defense command and control net, engagement control net, and data method to order engagements, disseminate air defense warnings (ADWs), and issue surface-to-air missile tactical orders based on the Army HQs (BDE/AAMDC), and the RADC/SADC's guidance.

B-2. The ADAFCO officer in charge acts as the primary representative for the brigade commander in all receiving unit command functions. These functions include, but are not limited to, participating in unit staff calls, battle update briefings, military decision making process (MDMP) sessions, as well as providing daily liaison support to both the brigade commander and the receiving unit commander. Additionally, the officer in charge is responsible for the oversight and supervision of the ADAFCO their functions and duties.

## ADAFCO MISSION AND FUNCTIONS

B-3. The ADAFCO deploys to the appropriate controlling authority at the RADC or SADC higher echelon unit. It is responsible for integrating air defense engagement operations into the joint integrated air defense system in order to destroy, nullify, or reduce the effectiveness of all hostile air and missile threats against friendly forces and to reduce the potential for fratricide.

B-4. Based on the location of the appropriate controlling authority the ADAFCO may be placed within the United States Air Force CRC, AWACS, the United States Navy AEGIS Combat System, the United States Marine Corps tactical air operations center, or the Combined Forces Air Component Commander's (CFACC). The ADAFCO also serves as a combined air and space operations center in order to conduct continuous (twenty-four hour) operations and ensure effective span of control. The ADAFCO serves as the

missile control officer for Army air defense weapon system engagement operations and is under direct control of the controlling authority's senior weapons director or mission crew commander.

B-5. Once assigned to one of the above controlling authority locations, the ADAFCO is responsible for, but not limited to, the following:

- Providing assistance for rapid engagement of airborne targets/platforms.
- Providing friendly protect functions.
- Reducing the potential for fratricide.
- Providing assistance in the surface-to-air fight.
- Coordinating ADA for designated assets/areas based on the defended asset list.
- Monitoring ADA unit information and status.
- Controlling AMD engagements.
- Tracking and deconflicting with airborne platforms and air defense assets via RADC/SADC mission crew.
- Relaying track identification and correlation between RADC/SADC and AMD units.
- Disseminating and complying with air defense warnings, airspace control orders, special instructions, early warning data, real-time intelligence, and air tasking orders.
- Issuing surface-to-air missile tactical orders based on the Army HQs (BDE/AAMDC), the SWD's and the RADC/SADC guidance.
- Establishing and maintaining uninterrupted voice and data connectivity to air defense fire direction center.
- Receiving and relaying to high echelon unit's engagement reports, surface-to-air missile status reports, and subordinate land-based air defense unit sensor data.

# ADAFCO ORGANIZATION

B-6. The ADAFCO provides the AAMDC and brigade mission command, conducting continuous 24-hour operations and ensure effective span of control. The ADAFCO deploys resources as identified during mission analysis and is METT-TC dependent. This is based in part on the overall joint air operations plan and area air defense plan development and analysis process.

## ADAFCO BATTLE TASKS

B-7. The following is a list of tasks that ADAFCO should follow in order to accomplish their mission or missions:

- Read and understand the ADA brigade and the receiving AMD mission unit's mission orders, and the joint area operations plan, area air defense plan, special instructions, air task order, airspace control order, tactical operational data, and operations task link.
- Deploy the brigade's ADAFCOs to the designated AMD mission.
- Participate in receiving AMD mission unit's military decision making process and required mission briefs.
- Establish and maintain data link between the ADAFCO, brigade and the command post.
- Joint integrated air defense units' air defense command and control net, data link coordination net, track supervision net, and early warning.
- Establish and maintain required data links between the ADAFCO, subordinate ICCs, and joint integrated air defense units, (tactical data link, IBS-S/IBS-I, SECRET Internet Protocol Router Network chat).
- Prepare and distribute the STOs to subordinate information coordination center.
- Forward early warning data, real-time intelligence, track correlation and IDs, CFACC special instructions and air task order, AADC area air defense plan, and the ACA ACO to subordinate ICCs.
- Receive and relay to higher echelon unit's engagement reports, SAMSTATREPs, and PATRIOT track data from subordinate ICCs.

- Analyze current unit status or changes to assigned air defense systems and report ADA impacts on assigned critical assets to higher echelon units.
- Be proficient in operating the receiving AMD mission command unit's tactical console or "scope."
- Assist the ADA brigade in advising the supported commander on land-based ADA operations, capabilities and limitations, and recommended changes to defense design or ADA readiness posture.
- Execute engagement operations; battle management, track identification and friendly protect functions for subordinate information coordination center in accordance with current rules of engagement, and in coordination with the designated engagement or identification authority. Inform the supported commander of any engagement results.
- Maintain thorough operation's log and assist the air defense fire control section officer in charge summarize events for reporting to the brigade command post.
- Conduct thorough changeover procedures for ADAFCO crew.

### ADAFCOS TACTICAL ARCHITECTURE FRAMEWORK

B-8. The tactical architecture framework for the ADA brigade's ADAFCOs serves as a general outline of significant inputs/outputs for sustained AMD operations. Its purpose is to provide an understanding of the origin/destination of information used to support engagement operations. The framework used by the ADAFCOs as a starting point to identify inputs and outputs to prepare for and execute combat operations. At a minimum, the ADAFCO team can identify from this framework operational requirements and who is responsible for providing them.

## RECEIVING AMD MISSION COMMAND UNIT RESPOSIBILITIES

B-9. As part of the overall joint air operations plan and are AADP development process, AD command and support relationships for ADA units will be identified and an associated task organization will be developed. The receiving AMD mission command unit's coordination for ADAFCO begins upon determination of a formal command and or support relationship between the AAMDC or ADA brigade and an associated AMD unit. The receiving unit's point of contact and the AAMDC or ADA brigade will first identify and define requirements for the ADAFCOs based on the JIADS' METT-TC factors. These requirements will result in a detailed ADAFCOs joining instruction for approval by the AAMDC or ADA brigade and AMD commanders. Planning considerations for the ADAFCO and unit's attachment include, but are not limited to the factors in the following paragraphs.

### DEFINING ADAFCOS REQUIREMENTS

B-10. There may be instances where the receiving ADA units might articulate specific requirements or desires for ADAFCO personnel. Despite the set organizational structure of the AAMDC or ADA brigade's ADAFCO, circumstances could arise where the receiving unit may specify a different rank, specific weapons systems experience or a requirement for a particular past operational experience or qualification. The specific requirements could be based on a whole host of METT-TC factors including the rank structure of the receiving unit, a multination force headquarters, or the level of responsibility and decision-making capability expected by the receiving commander. Whatever the requirements identified by the receiving unit, it is most important to ensure the ADAFCOs are qualified to control the engagement operations of the units subordinate ADA systems. Any special need articulated by the AMD unit that disqualifies certified ADAFCOs should be raised as a potential "show-stopper" early in the planning process.

### UNIQUE ADMINISTRATIVE REQUIREMENTS

B-11. There may also be a time when the receiving unit identifies unique administrative requirements for the ADAFCO. As with the operational requirements stated in the previous paragraph, the AAMDC or AMD brigade must immediately notify the receiving unit if it is unable to comply with specific requirements due to time or resource constraints. Some of these requirements may meet "no go" criteria and should be assessed in detail during planning and preparation phases of any operation. Again, unqualified ADAFCOs should never be deployed just to address a stated administrative requirement.

# JOINT INTERFACE DESCRIPTION

B-12. Defining the ADAFCOs with a technical description of each Tactical Data Link (TDL) establishes the requirement for each voice coordination net or circuit that supports TDL operations, and defines the general TDL capabilities of each service tactical data system. ADAFCOs with a firm understanding of the Joint multi-TDL architecture will add more value in operational planning and troubleshooting during operations.

B-13. Concept. command, control and communications systems should be reliable, survivable, flexible, interoperable, timely, and secure. This concept of joint combat operations is supported by the exchange of tactical information between participants on a real-time or near-real-time basis with TDLs. The exchange of real-time tactical information between mission command systems, weapon systems, and intelligence systems provides mutual support, allows coordinated action, and prevents interference between interfaced forces for the efficient and effective application of military force. This concept is applicable at all echelons of military action, whether single service, joint, or multinational operations.

# INFORMATION EXCHANGE

B-14. This interface provides for the continuous exchange of information concerning space, air, land, surface, and subsurface tracks. In addition, information on friendly units, the status of weapons and engagements, and other tactical data may be exchanged. Information on the tactical situation for the entire area of operations under the surveillance of the systems involved is provided to the joint commander and components. The interface also provides commanders with the capability to digitally transmit certain commands to subordinates and requests to other component commanders.

# TECHNICAL FUNCTIONS

B-15. The exchange of data has been designed to support joint operations involving the following technical functions:

- System information exchange and network management.
- System position and identification.
- Space surveillance.
- Air surveillance.
- Surface surveillance.
- Subsurface surveillance.
- Electronic warfare.
- Intelligence.
- Mission management.
- Weapons coordination and management.
- Control.
- Information management.

## VOICE COORDINATION AND CONTROL NETS

B-16. Voice coordination is essential and considered to be part of the total interface. The following nets should be established to support any interface. However, the actual voice net architecture used is established based on the size and complexity of the tactical digital information link architecture it supports. If circumstances demand, different voice net functions may have to be carried out on the same voice circuit. It should be noted Link 16 voice circuits should not be used as the transmission medium for any of these voice nets. Not all units will be able to monitor Link 16 voice. If a problem causes the loss of Link 16, the loss of Link 16 voice would exacerbate the problem. Communication nets are identified in the operations task link message.

## AIR DEFENSE MISSION COMMAND NET

B-17. The air defense mission command net (ADCCN) is a generic term that describes any net providing voice connectivity from the area air defense commander and units under command. The AADC uses the ADCCN to disseminate changes to the area air defense plan. This includes changes to air task order. Examples of information passed over the ADCCN would be MEZ activation or deactivation, cross-boundary engagements, voice reporting of alert status or weapon release conditions, changes to surveillance areas or track production areas, senior units will monitor the ADCCN for subordinate units based on operational functional areas. The net should be a covered circuit. Net control station responsibilities for this net rest with the AADC. ADCCN circuit specifications shall be detailed in the operations task link communications message and its usage may be specified in the ATO special instructions.

## ENGAGEMENT CONTROL NET

B-18. The engagement control net is the primary voice communications link between the ADAFCO and the subordinate ADA fire units. This link must be a continuous, unimpeded, secure circuit dedicated for the ADAFCO and subordinate units. Possible users of this net could include the ADAFCO, information and coordination central, fire coordination center, engagement control station, and any other ground base air defense personnel necessary to execute engagement operations. Information passed on this net could include engagement commands, identification issues, tactical ballistic missile events, track correlation and report dissemination.

## DATA LINK COORDINATION NET

B-19. The interface control officer uses the data link coordination net (DCN) to manage and coordinate the entire multi-link interface. This wide area net should, if communications assets are available, be a covered, dial and hold satellite communications (SATCOM) circuit with net control station responsibilities carried out by the ICO. If SATCOM is not available, a covered high frequency (HF)/ultra-high frequency (UHF) net can be used. The ICO uses this net to direct all changes to the operations task link, to include entry and exit of units, approving filter use, reconfiguration of the interface, changes to the data link reference point, frequencies or link duties, etc. All mission command capable interface units should monitor this net, if required, senior commands may guard the net for subordinates. If two or more units need to conduct troubleshooting that is judged to tie up the DCN, they should carry out the troubleshooting on a different frequency/circuit. If the data link architecture is of sufficient size that the interface control officer has appointed a Link 11 manager and a Link 16 manager, separate DCN nets should be established by each manager for their specific data link. The ICO will monitor all DCNs in that situation allowing the Link 11 and Link 16 managers to function as the data net control station agents for their respective nets. If separate Link 11 and Link 16 DCNs are established, any field joining units shall monitor both DCNs.

## TRACK SUPERVISION NET

B-20. The track supervision net is used to ensure all data reported on the interface is promptly reported, reported in the correct location, reported by only one unit, and that the reported data is correct. All units that input track data into the joint interface, shall monitor the track supervision net. This allows the tack data coordinator to resolve problems with multiple units simultaneously using only one communications circuit. If a unit is unable to monitor the track supervision net, a suitable relay shall be established. This net should be a dial and hold SATCOM channel if available or a covered HF/UHF circuit if SATCOM is not available. The track data coordinator is responsible for net control station functions on the track supervision net and the. voice product net

B-21. The voice product net provides amplifying signals intelligence information to interface units on a timely basis, and is used to coordinate signals intelligence information reported on the interface. It must be operated as a closed and secure net because of the sensitive nature of this net.

## DATA LOOPING

B-22. The resulting interface must be configured to ensure that data loops are not created that allow one or more units to receive the same information from more than one data path. It should also be configured to

ensure that a unit does not receive its own data from another source. Uncontrolled data forwarding and concurrent operation may result in data looping. Therefore, interface units conform to all protocols of each link in which they participate. These units report only local data onto each link. Even though data is not forwarded, a data change on one data link of a common information element; for example, an identification could change the local data of the interface unit and will subsequently be reflected on the other data link. Therefore, when a data forwarder is assigned between two data link networks, no interface unit should be permitted on the same networks or data looping may occur.

## Appendix C

# ADA Brigade Tactical Operations Center Equipment

This appendix explains the tactical operation center equipment that is used by the brigade. This information is presented in a simple format, maximizing the use of illustrations wherever appropriate. METT-TC will dictate configuration and applicability of assigned equipment.

## AIR AND MISSILE DEFENSE PLANNING AND CONTROL SYSTEM (AMDPCS)

C-1. AMDPCS is the air defense component of Army Battle Command System (ABCS) and is used to provide third dimension situational awareness. The AMDPCS consist of two subordinate systems, the forward area air defense communications system, mission command, intelligence, and the AMDWS. AMDPCS integrates air defense, fire units, sensors, and mission command centers into a coherent system capable of defeating/denying the low altitude aerial threat. AMDWS is the ADA tool that provides air and missile defense plans and air situational awareness to ABCS and commanders at all echelons. It is the staff planning and situational awareness tool used from the ADA battery to JOA echelons. It also is the air missile defense planning and control link to joint/multinational mission command systems. It also provides direct connectivity to an interoperability with the joint defense planner, a JOA level air and missile defense-planning tool.

C-2. AMDPCS integrates higher echelon, lateral, and subordinate mission command facilities, sensors; liaison elements, adjacent CPs, and ADA fire units into a synergistic system capable of defeating/denying the aerial, missile, and surveillance threat. It provides the automated interface for air defense components (JOA and below) to the Army mission command system, which allows commanders and staffs to communicate, plan, coordinate, and control the counterair fight. The system will be capable of collecting, storing, processing, displaying and disseminating air and ground situational awareness information, identification and targeting data and mission command information throughout ARMY ADA units and related joint or combined forces. AMDPCS enhances the ability of ADA commanders, staffs and weapon systems operators to visualize operational environment, realize situation awareness, synchronize operations with supported units throughout the JOA and defeat the enemy.

### SYNERGISTIC APPROACH

C-3. The AMDPCS is the focal point for air and missile defense planning and unity of effort within the contingency JOA. It provides the sole means of horizontal and vertical integration with joint forces. It facilitates the coordination and synergism of all air defense elements on the battlefield, from the AAMDC to the ADA platoon and sections, into a synchronized and effective counterair force. This is accomplished by assisting the commander in the performance of the following functions:

- Mission command functions
- Force Operation functions
- Engagement Operation functions
- LNO functions

### AUTOMATE EO AND FO FUNCTIONS

C-4. The AMDPCS fully automates the functions of force operations and engagement operations. Force operations are those functions required to plan, coordinate, sustain, and synchronize the air, land, and sea battle. It involves the preparation and positioning of friendly forces for maximum exploitation of enemy

weaknesses. It includes the horizontal and vertical exchange of operational environment situational awareness and mission command information within ADA, as well as with other battlefield forces. Situational awareness information involves the continuous position/location updates of key operational environment elements. Mission command information includes maps, maneuver graphics, mission command information, personnel, intelligence, operations and logistic information necessary to plan and synchronize combat operations. Force operations functions are accomplished to different degrees at each AMDPCS level and location. The functions associated with force operations include:

- Mission planning
- Limited collection and dissemination of intelligence
- Process tactical and administrative data
- Directing forces
- Managing resources
- Providing/displaying operational environment situational awareness

C-5. Engagement operations are those actions required to defeat/deny the aerial threat. They include the process of employing sensors, detecting/classifying/identifying aerial platforms, sending the air defense warning to posture air defense forces, and providing alerts/cueing to support engagements. The AMDPCS supports engagement operations by providing a real or near real-time picture of the airspace. It provides the capability to coordinate a mission command with other Army, joint, and combined forces. The functions associated with engagement operations include:

- Netting
- Correlation air tracks information
- Assessing threats
- Directing and controlling engagements
- Geographical filtering of air tracks
- Displaying air situation
- Identifying aerial platforms
- Warning alerting and cueing

## AUTOMATION

C-6. By automating the above functions, the AMDPCS will allow air defense forces to detect, acquire, and identify friendly and threat aerial platforms earlier and at far greater ranges, his reduces the chance of fratricide. Automation also allows for engagement of aerial threats at greater ranges, thereby increasing lethality. The AMDPCS system provides the capability to warn the joint force of impending aerial threats. AMDPCS also receives and correlates track data information from higher echelon and subordinate air defense sensors. It processes and distributes relevant data to air defense mission command centers, and disseminates engagement and mission command information. This provides for horizontal and vertical integration of the joint or combined forces from the division to joint operation area air defense echelons.

## AMDPCS CONFIGURATION

C-7. AMDPCS is comprised of four main elements: The S2/S3 current and future operations cell, the FDC, the S1/S4 sustainment cell, and the alternate command post. It directs the ADA brigade's tactical operations., during displacement operations, the command post assumes mission command of the ADA brigade. The layout is flexible and may change due to terrain limitations and or operational requirements. Each section within the AMDPCS will continuously monitor their respective functional areas.

## CURRENT AND FUTURE OPERATIONS CELL

C-8. The S2/S3 current operations cell provides a working area for processing operational message traffic and informational displays related to air defense operations. It includes separate operations and intelligence maps, CBRN status maps, weapon system status boards, and ADA operations status boards. To monitor the

air battle, an AMD workstation (AMDWS) is installed in the battle captain's work area. This allows the commander and operations officer to monitor the common air picture.

C-9. The S2/S3 future operations cell provides a working area for the brigade staff to plan and coordinate future operations. They have an AMDWS display to analyze current enemy tactics and perform trend analysis of past enemy actions. In addition, the future operations cell can perform simulations to determine the best courses of action to implement in order to optimize the defense against the expected enemy actions. It also contains the data processing equipment to publish and distribute the commander's decisions, orders, and plans to higher, adjacent, and subordinate units.

C-10. The Intelligence section has an All Source Analysis System workstation in both the current and future operations areas for receiving and disseminating intelligence related messages. They maintain enemy order of battle situation maps and other appropriate data.

C-11. The ADA brigade CBRN cell consists of a maneuver control system terminal, a CBRN analysis computer, secure voice communications to subordinate CBRN cells, a tactical CBRN plotting map, and a working area for processing CBRN information received from units.

### FIRE DIRECTION CENTER

C-12. The fire direction center is manned and operational on a 24-hour basis when an operational air picture is required. The commander maintains control of ADA units participating in the air battle from the FDC. The TD and TDA use an ADSI workstation to monitor and control the on-going air battle and perform management by exception.

- The FDC is the senior engagement and controlling authority within the brigade. The FDC, if holding engagement authority, directs or rejects engagements for units unless there is a total loss of communications to subordinate units. The FDC does not direct the fires of Avenger or Stinger units.
- Situations may require that individual fire units be directly controlled by the ADA brigade FDC.

### S1/S4 SUSTAINMENT CELL

C-13. The S1/S4 sustainment cell performs the functions of human resources and logistics management; it is linked to elements of the mission command and sustainment support system.

## HARDWARE AND SOFTWARE APPLICATIONS

C-14. The following paragraphs provide an overview of the AMDPCS equipment and software of the system.

### FORCE XXI MISSION COMMAND, BRIGADE AND BELOW

C-15. The Force XXI mission command, brigade and below (FBCB2) is used at the brigade level and below and designed to provide on the move, real time and near time situational understanding. FBCB2 is an essential sub-element of ABCS. It feeds the ABCS common database with automated positional friendly information and current tactical battlefield geometry for friendly and known or suspected enemy forces. It integrates with each of the ground combat command and control systems, providing a mission command capability. The lower tactical internet and warfighter information network terrestrial support FBCB communications.

### THE AIR DEFENSE SYSTEMS INTEGRATOR

C-16. The ADSI is a real time tactical mission command system delivered on commercial off the self-hardware. The ADSI system is a robust data communications and fusion system that receives, forwards and displays tactical information from the following sources:

- Multiple tactical data links, communicating with systems like the Patriot missile system, the AWACS, ships, and command centers multiple radar interfaces, developing a single, cohesive air picture.

- Electronic intelligence links, correlating hostile forces information to the real-time tactical picture.
- Non-real time data, correlation data such as the ATO airspace control orders
- ACO to the real-time tactical picture and the ATO and ACO describe aircraft mission parameters.
- The ADSI system can be delivered in a variety of configurations such as airborne, shipboard, mobile, and fixed-site (including laptops, commercial computers, and ruggedized hardware).
- A typical ADA system consists of three computer segments configured as the following components: the Tactical Situation Display Workstation, the Master Database, and the Multi-Link Interface Unit.

## AIR AND MISSILE DEFENSE WORKSTATION

C-17. The AMDWS is the digitized tool for monitoring and managing AMD operations. It allows integration of the air and missile defense plan with the ground scheme of maneuver. The air and missile defense workstation receives air situational information from the ADSI, and the forward area air defense (FAAD)/EO system. Ground situation and intelligence information are received from the maneuver control system MCS, ASAS remote workstation and other sources. The AMDWS maintains a comprehensive database of the tactical situation and also has mission-planning capabilities that can provide overlays of sensor and weapons coverage, airspace control measures, threat locations and planned unit positions. Air and missile defense workstations are integrated into air defense mission command systems at all echelons.

## ALL-SOURCE ANALYSIS SYSTEM

C-18. The all source analysis system (ASA) provides combat leaders with the fused intelligence needed to view the battlefield and more effectively conduct the land battle from battalion to JOA. ASAS encompasses a family of systems that includes all source workstation in the analysis control element found at division, corps and JOA. The collateral remote workstation desktop and laptop configuration operating on ASAS light is issued down to battalion level. The vehicle is mounted with ridged wall shelter (RWS) integrated communications analysis control team-enclave and the communications control set at brigade level. ASAS processes and analyzes all-source intelligence include:

- Non-structured threat data.
- Automated intelligence preparation of the battlefield.
- Production of a correlated ground picture.
- Dissemination intelligence products.
- Target nominations.
- Management the Intelligence and electronic warfare ISR collection and mission.
- Counterintelligence and electronic warfare mission support.
- Interim capabilities for intelligence fusion to Distributed Common Ground System-Army.
- Predicted intelligence analysis, and interoperates with Army mission command System (ABCS), joint, JOA and national sources.

C-19. It supports all echelons and functions in all phases of military operations across the full range of military operations. ASAS supports current operations and future planning. ASAS receives and correlates information from strategic and tactical intelligence sensors and sources. It automates sensor-to-shooter linkage by providing target nominations directly to the advanced field artillery tactical data system. A mission-critical system of systems, it is built upon the common hardware and software (CHS-2) platform and is tactically deployable.

## TOCNET

C-20. The TOCNET systems provide a modular expandable approach to voice and data communications for field tactical mission command personnel. The system consists of two types of line replaceable units, a micro central switching unit (MSCU) and a crew access unit (CAU). Each MCSU with attached communication assets comprise a node. Different size expanded systems can be constructed with a building block approach by adding or deleting nodes. Multiple nodes can be networked together to form one larger system with up to

1024 assets. A typical node provides an integrated communication and data solution. Radios, phones, and operators are interconnected into a single functional entity. All individual node and expanded system assets are usable without the necessity for an external equipment. The system may be expanded by connecting nodes together via the Synchronous Optical Network OC-3 Fiber Optic network interface. Up to 64 nodes are allowed. System users interact with TOCNET via CAU. All operator commands are entered through a touch-panel on the CAU display. A series of screens and menus allows the operator to function of the TOCNET system.

## SINGLE-CHANNEL GROUND AND AIRBORNE RADIO SYSTEM (SINCGARS)

C-21. This radio is the primary combat net radio (CNR) for the Army, designed mainly for voice mission command for infantry, armor, field artillery, and air and missile defense units. Some of the characteristic are:

- Provides high-frequency, and frequency modulation VHF-FM radio system for voice and data transmission.
- Enables secured communications by transmitting tactical voice and data using communications security and frequency hopping techniques.
- Operates in a single channel (single frequency) mode for interoperability with older radios.
- Provides a digital communications link for the threat identification with the SINCGARS.
- Uses SINCGARS System Improvement Program (SIP) with the threat identification to support Army digitization of the battlefield.
- Use SINCGARS SIP, but incorporates forward error correction, higher data rates, packet technology and the internet controller.
- Modifies to SINCGARS as the ASIP.
- SINCGARS ASIP as a new man pack radio adapted from the SINCGARS airborne radio incorporates programmable digital signal processing technology.
- SINCGARS ASIP as a significantly smaller and lighter version, improves reliability, and extends battery life by incorporating low power technology.

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## Appendix D

# ADA Communications

This appendix provides an overview of ADA communications as it relates to ADA brigade operations. It addresses the aspects of air and missile defense communications, the responsibilities of the commander, and operational control as they relate to JOA air and missile defense. Additionally, it explains the communications systems, intelligence networks and data link protocols used by the commander and staff to integrate and coordinate the planning and execution of successful air and missile defense operations.

## COMMUNICATIONS

D-1. ADA brigade communications must be an integrated system of doctrine, procedures, organization structure, personnel, equipment, and facilities designed to support the air and missile defense mission. JOA and corps communications systems must allow the commander to exercise authority in both FO and EO throughout all phases of a force projection operation.

## ARCHITECTURE

D-2. The communications architecture is divided into the warfighter information network-terrestrial, the Army data distribution system, and combat net radios. The ADA brigades are required by joint, combined, and operational doctrine to mission command air and missile defense operations. To accomplish this, the ADA brigade must transmit and receive the following information.

- Alerting and early warning.
- Air battle control.
- Mission command.
- Administrative and logistics.
- Targeting information from intelligence broadcasts.
- Supported unit command relationship.
- Liaison

## DESIGN

D-3. ADA brigade communications are designed to support two major functions: EO and FO. These functions are explained in the following paragraphs.

### ENGAGEMENT OPERATIONS

D-4. EO functions includes those functions required to execute the air, missile, and counter surveillance battles. The air surveillance function establishes a correlated air picture with target types and identification. The mission control function processes commands from higher echelon units, evaluates the threat, optimizes engagement performance, monitors the outcome of engagements, and manages the employment of sensors and decoys. The attack operations support function determines the location of enemy air and missile launch sites and provides it to the communications system and intelligence for attack operations. The data distribution function distributes the air picture and track data.

### FORCE OPERATIONS

D-5. FO includes those functions required to plan, coordinate, prepare for, and sustain the total air and missile defense mission. The situation analysis function continuously collects and evaluates all available

information on friendly and hostile forces, including the intelligence tasks of continuous acquisition program baseline and situation development. The defense planning function develops and assesses various options and produces a preferred course of action. The coordination function implements the coordination and cooperation required to develop, distribute, and execute the plan in a timely manner. The monitoring and controlling function observes and records activities taken in response to orders issued and performs alerting based on the situation. The routine staff function supports the overall mission command process. Predictive EO algorithms will use FO information from the situation analysis function as the basis for recommending or directing EO activities. The ADA brigades perform FO functions in the remainder of the command post operational cells.

# COMMUNICATIONS SUPPORT

D-6. Connectivity into the WIN-T is required for most ADA brigade non-EO communications. The ADA brigade use WIN-T to connect to the joint network node. The ADA brigade relies upon the integrated JOA signal battalion or the expeditionary signal battalion to provide connectivity into the JOA WIN-T. Required communications for an ADA brigade are identified in the following paragraphs.

## ENGAGEMENT OPERATIONS DATA

D-7. The EO data is normally received via an automated data link from a higher-level control facility. The actual control facility will be situational dependent. For example, during forced entry operations the control facility could be non-land based. They are either an Air Force AWACS or a Navy AEGIS cruiser. After establishment of a lodgment, control could change to another land based facility, either an Air Force CRC or a Marine Corps tactical air operations center. The data link to be used will depend upon the capability of the control facility. Data links can be established using TDL-A, TDL-B, or TDL-J message formats. The TDL-A and TDL-J networks can be entered directly using communications equipment and HF or UHF radios located in the brigade CP. TDL-B data links enter via a modem and an interface into the WIN-T for transmission. The ADA brigade needs to pass EO data to subordinate task forces and battalions. This is accomplished primarily by TDL-J. A TDL-1, and TDL-B can be used as secondary means using the joint network node (JNN) as transmission means.

## ENGAGEMENT OPERATIONS VOICE

D-8. EO voice networks are established using either HF or UHF radios for airborne or sea based control facilities and through the JNN for other land based control facilities. The ADA brigade FDC needs to monitor or participate in voice networks as described in the following paragraphs.

## INTERFACE COORDINATION NETWORK

D-9. The interface coordination network coordinates tactical weapons employment and is the communications system and intelligence interface. This network most closely resembles the air defense control network described below.

## TRACK SUPERVISION NETWORK

D-10. The track supervision network (TSN) is used to clarify the tactical picture and assist with unit interface. This network most closely resembles the intelligence and radar reporting network.

# AIR DEFENSE COMMAND

D-11. The air defense command network is a conference network used by the brigade and battalion TDAs for clarifying the air picture. The FDC normally has either an AM or an FM radio backup for this network.

## EARLY WARNING VOICE NETWORKS

D-12. The CP is equipped with a single channel SATCOM radio to receive BM launch early warning directly from the JOA BMD early warning network.

### FORCE OPERATIONS COMMUNICATIONS

D-13. FO voice and data are routed entirely over the area common user system. This is accomplished by using the joint node JNN, which is capable of connecting to the global information grid.

### COMPUTERS

D-14. Automation exist throughout the command post to enhance performance and promote standardization, commonality and modularity. The command post will maximize the use of existing and planned automation in the form of common reconfigurable workstations and software modules to tailor the information processing automated decision aids for a particular function, application or situation. Computers support the rapid fusion of data to meet the short execution timelines needed to fight the air and missile defense battle.

### INTELLIGENCE

D-15. Intelligence is vital to the decision making cycle and must support friendly forces threat assessment, defense planning, force warning and intelligence preparation of the battlefield (IPB) functions as well as target prioritization and engagement decisions against enemy forces. The intelligence function focuses on acquiring and making information available to support brigade operations using intelligence systems, capabilities, and organizations.

D-16. The brigade will receive near-real time intelligence and early warning information directly from the TIBS and TDDS networks via an organic commander's tactical terminal/joint tactical terminal radio (CTT/JTT). These networks will provide information from a number of data sources both national and JOA. These networks are explained in detail later in the next section.

## COMMUNICATIONS SYSTEM

D-17. The following communications systems support the brigade in accomplishing its AD mission. Some of these systems may not be available at all times.

### COMMANDERS TACTICAL TERMINAL/JOINT TACTICAL TERMINAL

D-18. The commander's tactical terminal/joint tactical terminal CTT/JTT provides the joint war fighter with seamless, near real-time tactical intelligence and targeting information. It provides the critical data link to intelligence centers, air and missile defense activities, fire support, and aviation nodes across all services. The CTT/JTT is capable of accessing information transmitted over the tactical reconnaissance intelligence service TRIXS, tactical information broadcast service TIBS, both UHF SATCOM and line-of-sight, tactical data information exchange system-B TADIXS-B, and the TRAP data dissemination system TDDS. The CTT/JTT is a family of receivers. The two-channel AN/USR-5 radio is capable of receiving data from two networks simultaneously. The three-channel AN/USC-55 (JTT/H3) is capable of operating full duplex in one network and receives only in two additional networks simultaneously. The AN/USR-6 is a receive-only, three-channel radio, capable of receiving from three networks simultaneously.

### ENHANCED POSITION LOCATION REPORTING SYSTEM

D-19. The AN/VSQ-2 enhanced position location reporting system (EPLRS) is a secure, anti-jam, and data communications system that provides ground combat command and control requisite data distribution at corps and lower echelons. It also provides an automated position location reporting capability in support of friendly battlefield situational awareness. EPLRS consists of two major components. The EPLRS user unit is similar in physical characteristics to SINCGARS.

### HAVEQUICK

D-20. The Havequick (AN/ARC 164 V) is a modular, slice constructed, solid state, 10 watt UHF transmitter/receiver that provides 7000 channels, 20 of which can be preset. It is standard equipment for the U.S. Air Force and Army with alternate console/panel mounts for each service. The AN/ARC 164 includes the RT-1145 (10W) and RT-1146 (30W) remote transceivers, C-9533 control unit, and ID-1961

frequency/channel indicator. ACA-218B is available as a vehicle/ground adapter. It provides plug-in operation of standard VHF and UHF airborne radios in vehicles and fixed ground stations.

### SINGLE CHANNEL GROUND-AIR RADIO SYSTEM (SINCGARS)

D-21. Single channel ground-air radio system is a family of VHF-FM radio sets designed to meet the Army's tactical communications requirements under the new force projection doctrine. SINCGARS is designed for simple, quick operation utilizing a 16-element keypad for push button tuning. SINCGARS is capable of short-range or long-range operation for voice, frequency shift keying, or digital data communications. It can be used for single channel or in a jam-resistant frequency-hopping mode that can be changed as needed. SINCGARS has a built-in self-test with visual and audio feedback.

### WARFIGHTER INFORMATION NETWORK-TERRESTRIAL (WIN-T)

D-22. The WIN-T is the in-JOA, tactical communications equivalent of AT&T. The WIN-T networks are node-based, digital, circuit-switched voice, and data networks supporting tactical users in the JOA. The WIN-T will gain connectivity through the JNN at division, and for the corps and above. The WIN-T will gain connectivity through the single shelter switch located within the engineer support battalion.

### JOINT NETWORK NODE (JNN)

D-23. The JNN has introduced internet protocol (IP) capabilities to the battlefield and dramatically increased the capacity for moving data at corps, division, brigade, and battalion levels. The JNN capabilities can provide joint and multinational connectivity and allow for interfacing to current networking communications systems through:

- STEP.
- BLOS.
- Line of site (LOS).

### TRANSMISSION SYSTEMS

D-24. Transmission systems include the AN/TRC-170 troposcatter system, the AN/TSC-85A, AN/TSC-93A, AN/TSC-94A, and the AN/TSC-100A satellite communications terminals.

### JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM

D-25. Joint tactical information distribution system (JTIDS) is a high capacity, time division multiple access information distribution system that provides integrated communications, relative navigation, and identification capabilities. It has been developed to facilitate secure, flexible, and jam resistant data and voice transfer in real time among dispersed and mobile elements of the military services. The significant characteristic of JTIDS is the system architecture, which simultaneously interconnects all participants. The system is considered a pool of weapons, sensors, and command information that is continuously updated by each participant. The participant simultaneously taps the pool for tactical data and is provided with information and commands for force management and coordination.

### MULTIFUNCTION INFORMATION DISTRIBUTION SYSTEM (MIDS)

D-26. The multifunction information distribution system (MIDS) is a communications terminal in a high-speed, high-capacity, digital-data information network. It is capable of several types of jam-resistant, secure communications within a network and allows members to positively identify one another while exchanging tactical and relative navigational digital data.

## TACTICAL DIGITAL INFORMATION LINKS

D-27. A TDL is a JCS approved standardized communication link suitable for transmission of digital information. A TDL is characterized by standardized message formats and transmission characteristics. TDLs interface two or more mission command or weapons systems via a single or multiple network architecture

and multiple communication media for exchange of tactical information. Four tactical links are used: TDLs A, B, J, and A TDL-1.

### TDL –A

D-28. TDL-A, Link 11, is a secure, half duplex netted digital link that provides a network for exchanging tactical data between TDL-A subscribers at either 1364 or 2250 bits per second. It is normally operated in a roll call or polling mode. It is controlled by a net control station to exchange information between airborne, land based, and shipboard systems. It can be exchanged using either HF or UHF communications.

### TDL-B

D-29. TDL-B, Link 11B, is a secure, full duplex, point to point digital data link utilizing serial transmission frame characteristics and standard message formats at either 600, 1200, or 2400 bits per second. It can be exchanged using UHF or landline communications.

### TDL-J

D-30. TDL-J, Link 16, is a secure, jam resistant, high capacity, nodeless data link which uses the JTIDS transmission characteristics and protocols conventions and message formats.

### INTERIM JTIDS MESSAGE SPECIFICATION

D-31. Interim JTIDS message specification (IJMS) is a secure, high capacity, jam resistant, nodeless interim specification that uses the JTIDS transmission characteristics and the protocols, conventions, and fixed length message formats defined by IJMS. IJMS information can be received by the Army's adaptable surface interface terminal or the JTIDS Class 2M radio terminal.

### ARMY TACTICAL DATA LINK-1

D-32. ARMY tactical data link-1 (ATDL-1) is a secure, full duplex, point to point digital data link utilizing serial transmission frame characteristics and standard message formats at a basic speed of 1200 bits per second. It is used to interconnect tactical air control systems and Army or Marine Corps tactical air and missile defense oriented systems. ATDL-1 can be exchanged using UHF, VHF, or landline communications.

## INTELLIGENCE NETWORKS

D-33. The ADA brigade can benefit from other intelligence networks that may be in the JOA. Some of these networks are explained in the following paragraphs.

### TACTICAL INFORMATION BROADCAST SERVICE

D-34. Tactical information broadcast service (TIBS) is a JOA UHF LOS or satellite-interactive network. The TIBS can support up to 10 producers, 50 query nodes, and an unlimited number of receive-only users. The TIBS operates at the SECRET collateral level. The TIBS network of continuous, secure broadcast of data among producers and subscribers provides a near-real-time, multi-sensor, multi-source situational awareness and threat warning information broadcast to the Soldier. The primary function of TIBS is to provide near-real-time tactical information to the mission commanders for targeting, battle management, and situational awareness. After the intelligence and information is collected and processed, TIBS supports the rapid, global dissemination of the battle situation to the operational forces at all levels of command in a common, readily understood format, and in sufficient time to react to the data.

D-35. Four important networks support the dissemination of tactical intelligence. The tactical-receive equipment and related applications and tactical data information exchange system-B (TADIXS-B) broadcast networks disseminate global detection and cueing information to users worldwide. The tactical information broadcast service network disseminates JOA area information with tracking accuracy. The tactical reconnaissance intelligence service network disseminates tactical intelligence with targeting accuracy.

### TRAP DATA DISSEMINATION SYSTEM

D-36. Trap Data Dissemination System provides worldwide dissemination of high-interest electronic intelligence, contact reports, and parametric information at the SECRET level.

## INTELLIGENCE SYSTEMS-TROJAN SPIRIT

D-37. TROJAN SPIRIT is an Intelligence Information Dissemination System. It is organic to military intelligence organizations and serves as a top-secret Network Operations required to support distributed operations within urban and complex terrain across potentially significant distances, as well as the linkages required for effective communications with the division/ brigade combat team (BCT)/SBCT (TROJAN SPIRIT lite) or higher echelons. TROJAN SPIRIT is a tri-band satellite terminal capable of operating in the C, Ku, and X bands. The system receives displays and transmits digital imagery, weather, terrain products, templates, graphics and text between CONUS and OCONUS bases. It also provides it to deployed forces. TROJAN SPIRIT uses CONUS-based data processing, whose database is constantly updated from multiple sources. It either broadcasts to designated users or may be "pulled" by designated users. TROJAN SPIRIT is unique to the IEW community. It is intended to augment the JOA.

# Glossary

## SECTION I – ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **AADC** | area air defense commander |
| **AAMDC** | army air and missile defense command |
| **ABCS** | Army Battle Command System |
| **ACA** | airspace control authority |
| **ACP** | airspace control plan |
| **ADA** | air defense artillery |
| **ADW** | air defense warning |
| **ADAFCO** | air defense artillery fire control operations |
| **ADP** | Army doctrine publication |
| **ADRP** | Army doctrine reference publication |
| **ADSI** | air defense systems integrator |
| **AMD** | air and missile defense |
| **AMDPCS** | air and missile defense planning and control system |
| **AMDWS** | air and missile defense workstation |
| **ASCC** | Army Service Component Commander |
| **ATP** | Army techniques publication |
| **AWACS** | airborne warning and control system |
| **BCD** | battlefield coordination detachments |
| **CBRN** | chemical, biological, radiological, and nuclear |
| **CONUS** | Continental United States |
| **CP** | command post |
| **CRC** | control and reporting center |
| **DAADC** | deputy area air defense commander |
| **DCA** | defensive counterair |
| **DS** | direct support |
| **EO** | engagement operations |
| **EPLRS** | enhanced position location reporting system |
| **ESC** | expeditionary sustainment command |
| **FDC** | fire direction center |
| **FO** | force operations |
| **FM** | field manual |
| **IADS** | integrated air defense system |
| **ICC** | information coordination central |
| **ICO** | interface control officer |
| **JFACC** | joint force air component commander |
| **JFC** | joint force commander |
| **JFLCC** | joint force land component commander |
| **JOA** | joint operations area |

| | |
|---|---|
| **JP** | joint publication |
| **LNO** | liaison officer |
| **METT-TC** | mission, enemy, terrain and weather, troops and support available, time available, civil considerations |
| **MEZ** | missile engagement zone |
| **OCA** | offensive counterair |
| **OPCON** | operational control |
| **RADC** | regional air defense commander |
| **SADC** | sector air defense commander |
| **SINCGARS** | single-channel ground and airborne radio system |
| **TAAMDCOORD** | theater Army air and missile defense coordinator |
| **TACON** | tactical control |
| **TDL** | tactical data link |
| **THAAD** | terminal high altitude area defense |
| **ULO** | unified land operations |

## SECTION II – TERMS

**active air defense**

(DOD) Direct defensive action taken to destroy, nullify, or reduce the effectiveness of hostile air and missile threats against friendly forces and assets. (JP 3-01)

**agility**

(Army) The ability of friendly forces to react faster than the enemy. (ADRP 3-90)

**air and missile defense**

(Joint) Direct active and passive defensive actions taken to destroy, nullify, or reduce the effectivenessof hostile air and ballistic missile threats against friendly forces and assets. (JP 3-01)

**air defense artillery**

(Army) The defensive measures desginated to destroy attacking enemy aircraft or missiles in the atmosphere, or to nullify or reduce the effectiveness of such attack either through survellance, actions or active engagments of aerial threat. (ADRP 3-09)

**air defense warning condition**

(Joint) An air defense warning given in the form of a color code corresponding to the degree of air raid probability with yellow standing for when an attack by hostile aircraft or missiles is probable; red for when an attack by hostile aircraft or missiles is imminent or is in progress; and white for when an attack by hostile aircraft or missiles is improbable. (JP 3-01)

**assessment**

(Joint) A continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. Determination of the progress toward accomplishing a task, creating a condition, or achieving an objective. Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity. Judgment of the motives, qualifications, and characteristics of present or prospective employees or "agents." (JP 3-0)

**counterair**

(Joint) A mission that integrates offensive and defensive operations to attain and maintain a desired degree of air superiority and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. (JP 3-01)

**cover**

(Army) A security task to protect the main body by fighting to gain time while also observing and reporting information and preventing enemy ground observation of and direct fire against the main body. (ADRP 3-90)

**defended asset list**

(Joint) A listing of those assets from the critical asset list prioritized by the joint force commander to be defended with the resources available. (JP 3-01)

**defense design**

(Army) A strategy for defense based on a compiled list of defensive tasks required to defend against a specific threat or support specific mission operations. Each defensive task is built using intelligence, features such as friendly force lay down, adversary forces lay down, named area of interest or ballistic missile operations areas, and characteristics such as defended assets, terrain, system location or orientation, and limitations. (FM 3-27)

**defensive counterair**

(Joint) All defensive measures designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. (JP 3-01)

**electronic attack**

(Joint) A division of electronic warfare involving the use of electromagnetic energy, directed energy, or anti-radiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. (JP 3-13.1)

**engage**

(Joint) In AD, a fire control order used to direct or authorize units and/or weapon

systems to fire on a designated target. (JP 3-01) To bring the enemy under fire.

(JP 3-09.3) (Approved for incorporation into JP 1-02.)

**identification**

(Joint) The process of determining the friendly or hostile character of an unknown detected contact. In arms control, the process of determining which nation is responsible for the detected violations of any arms control measure. In ground combat operations, discrimination between recognizable objects as being friendly or enemy, or the name that belongs to the object as a member of a class. (Approved for incorporation into JP 1-02 with JP 3-01 as the source JP.)

**integrated air and missile defense**

(Joint) The integration of capabilities and overlapping operations to defend the homeland and United States national interests, protect the joint force, and enable freedom of action by negating an adversary’s ability to create adverse effects from their air and missile capabilities. (JP 3-01)

**integration**

(DOD) In force protection, the synchronized transfer of units into an operational commander's force prior to mission execution. (FM 6-05) The arrangement of military forces and their actions to create a force that operates by engaging as a whole. (FM 3-07, FM 3-38, FM 6-05) In photography, a process by which the average radar picture seen on several scans of the time base may be obtained on a print, or the process by which several photographic images are combined into a single image. (JP 1) (FM 6-05) (Army) Combining all of the elements of sustainment (task, functions, systems, processes, organizations) to operations assuring unity of command and effort. (ADP 4-0)

**interoperability**

(Joint) The condition achieved among communications-electronics systems or items of communications-electronics equipment when information or services can be exchanged directly and satisfactorily between them and/or their users. The degree of interoperability should be defined when referring to specific cases. (JP 6-0)

**mission command**

(Army) The exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations. (ADP 6-0)

**positive control**

(Joint) A method of airspace control that relies on positive identification, tracking, and direction of aircraft within an airspace, conducted with electronic means by an agency having the authority and responsibility therein. (JP 3-52)

**positive identification**

(Joint) An identification derived from observation and analysis of target characteristics including visual recognition, electronic support systems, non-cooperative target recognition techniques, identification friend or foe systems, or other physics-based identification techniques. (JP 3-01)

**principle**

(Army) A comprehensive and fundamental rule or an assumption of central importance that guides how an organization or function approaches and thinks about the conduct of operations. (ADP 1-01)

**procedural control**

(Joint) A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (JP 3-52)

**restricted operations zone**

(Joint) Airspace reserved for specific activities in which the operations of one or more airspace users is restricted. (JP 3-52)

**rules of engagement**

(Joint) Directives issued by competent military authority that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. (JP 1-04)

**tactical control**

(Joint) The authority over forces that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. (JP 1)

**task organization**

(Army) A temporary grouping of forces designed to accomplish a particular mission. (ADRP 5-0)

**track**

(Joint) The process of displaying or recording the successive positions of a moving object. (JP 3-01)

**weapons control status**

(Joint) An air defense control measure declared for a particular area and time by an area air defense commander, or delegated subordinate commander, based on the rules of engagement designed to establish the freedom for fighters and surface air defense weapons to engage threats. (JP 3-01)

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**ATP 3-18.2**
**16 March 2016**

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