ATP 3-01.64

Avenger Battalion and Battery Techniques

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Avenger Battalion and Battery Techniques

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Preface

Army techniques publication (ATP) 3-01.64 is the Army's specific Avenger publication outlining specific techniques when employing and operating this lethal air defense (AD) system. It describes how Army Air Defense Artillery (ADA) and its organizations conduct and train for operations.

ATP 3-01.64 provides techniques for commanders, staffs, leaders and trainers, at all levels. The primary target audience for this manual includes all fires and ADA Soldiers. In addition, other Services and joint organizations can use this manual to gain insight to Army Air and Missile Defense (AMD) operations.

It presents the Avenger role in offense and defense, unified land operations and sustainment and stability operations. ATP 3-01.64 provides the Avenger mission and a general overview of Avenger Battery and Battalion techniques.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and in some cases host-nation laws and regulations. Commanders at all levels ensure that their Soldiers operate in accordance with the law of war and the rules of engagement. (see FM 27-10).

ATP 3-01.64 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

ATP 3-01.64 applies to the Active Army, Army National Guard/Army National Guard of the United States and U.S. Army Reserve unless otherwise stated.

The proponent for this publication is the U.S. Army Fires Center of Excellence and Fort Sill. The preparing agency is Directorate of Training and Doctrine, Air Defense Artillery Branch. Send written comments and recommendations on Department of Army (DA) Form 2028 (Recommended Changes to Publication and Blank Forms) directly to Commandant, U.S. 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 3-01.64 describes Army ADA in near term or current operations and discusses emerging changes to Army ADA includes the transformation from weapon system capabilities to an integrated joint team at strategic, operational, and tactical levels. The driving forces for these changes are in (validated concept). The United States Army's Concept Capability Plan for Global Missile Defense 2015-2024 and ADP & ADRP 3-0, and the shift in warfighting function.

ATP 3-01.64 is the Army's publication outlining techniques for Avenger batteries and battalions. *Techniques* are non-prescriptive ways or methods used to perform missions, functions or tasks. It does not contain tactics or procedures. Tactics and procedures listed in FM 3-01, *U.S. Army Air and Missile Defense Operations*. This manual provides techniques associated with integrating the air defense function into planning at strategic, operational, and tactical levels.

ATP 3-01.64 provides the Avenger mission and a general overview of Avenger battery and battalion techniques:

- Chapter 1 discusses Avenger operations.
- Chapter 2 describes Avenger mission command.
- Chapter 3 describes unified land operations.
- Chapter 4 describes Avenger in support of the offense and defense.
- Chapter 5 discusses stability operations.

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Chapter 1

Avenger Operations

This chapter discusses the role of Avenger battalion and battery operations in support of AMD operations. It discusses the mission, organization of the different types of short-range air defense Avenger capabilities, and how they contribute to victory on the battlefield.

MISSION

1-1. Avenger counter low-altitude unmanned aircraft systems, high-speed fixed-wing and rotary-wing aircraft, reconnaissance, intelligence, surveillance and target acquisition assets. Avenger is a versatile system organized as Battalions in the Army National Guard and part of a Composite Patriot or Indirect Fire Protection Capability Battalion in the active component. The Army active component no longer has pure Avenger Battalions.

1-2. While conducting these Air Defense missions, Avenger operates within the five tenets of Army operations: initiative, agility, depth, synchronization, and versatility.

ROLES

1-3. Avenger is the Short Range AD system best suited to provide air defense to maneuver commanders. Avenger forces protect maneuver elements during lodgment, early entry operations, shaping activities against fixed and rotary-wing aircraft attacks, cruise missile attacks, and observation by surveillance platforms. While able to operate as an independent battalion, batteries or Avenger teams, it may also be task organized with other ADA systems. Avenger can deploy to secure Patriot's operational area from threat sets where Patriot cannot defend. The Avenger's role and contributions to unified land operations discussed in detail in chapter 3.

BATTALION

1-4. Avenger pure battalions exist only in the Army National Guard. Avenger battalions can be employed with other Army ADA systems as part of an air defense artillery task force under the Army Air and Missile Defense Command or ADA brigade to support joint force commander (JFC) priorities, or it can support corps, division, brigade combat teams or a task force for a period of time or a specific mission. Avenger battalions operating in a division or corps area of operations attached to a maneuver enhancement brigade for positioning sustainment or security.

1-5. At corps and division level, Avenger units employed in a supporting role to provide direct support (DS) or general support (GS) air defense to the force commander. When supporting a maneuver force the Avenger battalion staff will coordinate with the supported commander's staff and AD Coordination elements to plan, integrate and employ Avenger assets to defend the supported commanders' priorities.

1-6. The Avenger battalion is comprised of four batteries, a headquarters and headquarters battery, three firing batteries and an organic maintenance detachment. The headquarters portion of the battery is comprised of S-1 through S-6 sections that support the commander, control staff planning and supervise operations. Other sections in the headquarters include an ADA Tactical Operations section responsible for the operations and functions of the air battle management operations center (ABMOC) shelter; a sensor section; a maneuver ADA coordination section; and a medical section. The headquarters battery contains battery logistical support, food service support for the battalion, and force protection. The maintenance detachment provides field level maintenance support to the battalion. This support includes conventional wheel maintenance, ground support equipment, communications and electronics, and missile unique systems

(Avenger & Sentinel) maintenance. As part of the composite Patriot battalion, the Avenger battery is the highest echelon in the Battalion, with platoons.

KEY AVENGER BATTALION ELEMENTS

1-7. The headquarters and headquarters battery operates the battalion's command post (CP) and the ABMOC. These elements support and monitor force and engagement operations. The battalion command post additionally:

- Plans, implements, and coordinates not only future operations but also conducts force operation functions.
- Operates the battalion command communications net and the Battalion Information Coordination Center. The center collects, disseminates intelligence and provides threat analysis that will influence future operations.

1-8. The ABMOC is equipped with Forward Area Air Defense (FAAD) Command, Control, Communications, and Intelligence (C3I) system, air, and missile defense workstation (AMDWS). The FAAD C3I system and its subcomponents are used to execute the battalion's engagement operations functions. It collects, stores, digitally processes, displays and disseminates real-time tactical cueing and tracking information, the common tactical air picture, mission command function, and intelligence information to all ADA weapons.

Battery

1-9. In addition to the Avenger-pure battalions, fielded in the National Guard, Avenger batteries are in Composite Patriot-Avenger Battalions and Indirect Fire Protection Capability battalions. The Avenger battery normally fights at the division or brigade combat team level. The battery command team will coordinate with the supported commander's staff and Air Defense Element to plan, integrate and employ Avenger assets to defend the supported commander's priorities. Command and support relationships for each operation level determines the logistical support for Avenger batteries. Firing batteries are composed of 2 platoons, a battery command post, 2 Sentinel radars, 2 Sensor Mission Command Nodes, and 12 Avenger systems.

Battery Command Post

1-10. The battery CP is configured and operates in a manner similar to the ABMOC, with the exception of not having Link 16 capability and is capable of performing force operations with AMDWS and if necessary functioning as an operations cell supporting engagements using the FAAD C3I system.

Avenger Platoons

1-11. The Avenger platoons normally fight in support of maneuver battalions. Each platoon is composed of six Avengers, Sentinel radar and a Sensor Mission Command node. The platoon can be employed as a unit or task organized as individual fire units per the supported commander's scheme of maneuver. Table 1-1 on page 1-2, outlines a recommended pre-combat checklist or pre-combat inspection checklist for leadership at all levels to use. Table 1-2 on page 1-3 provides an example of a platoon leader's planning checklist. Table 1-3 on page 1-4 provides an example of a platoon sergeant planning checklist. Table 1-4 on page 1-5 provides an example of a section or squad leaders briefing checklists. Table 1-5 on page 1-6 provides an example of a position occupation checklist while Table 1-6 on pages 1-7 thru 1-10 is an example of a platoon operations checklist.

Table 1-1. Pre-combat inspection checklist

Pre-combat Inspection Checklist
1. Individual Soldier readiness 2. Personal Protective Equipment 3. Equipment readiness (Unit SOPs) 4. General 5. Communications equipment 6. Fire control system 7. Weapons 8. Safety
SOP standard operating procedure

Table 1-2. Platoon leader's planning checklist

Platoon Leader's Planning Checklist
1. Analyze the threat 2. Analyze mission 3. Troop and logistics concentrations 4. Aerial port of debarkation and sea port of debarkation 5. Consideration for operations 6. Delay 7. Withdraw 8. Convoy 9. Choke point 10. Backwards planning 11. Primary route 12. Alternate route

1-12. Avenger Battalions operating in a division or corps area of operations may be attached to a maneuver enhancement brigade for positioning, sustainment, or security. See Table 1-3 for platoon sergeant planning checklist.

Table 1-3. Platoon sergeant planning checklist

Platoon Sergeant Planning Checklist

The platoon sergeant should use all available checklist to assist the platoon leader. This checklist focuses on mission command, planning, preparation and execution. Certain tasks have dual application to a phase; they are identified by the phase to which they apply.

1. Monitor platoon operations.
2. Maintain situational awareness.
3. Ensure good security plan during position occupation.
4. Known location of battery and supported maintenance collection point-current and future.
5. Known location of battery and supported unit tactical operations center and tactical command post-current and future.
6. Known locations of battery and support unit decontamination sites-current and future.
7. Known location of battery and support unit casualty collection points-current and future.
8. Known location of sensors supporting platoon. Planning, preparation and execution; (each task will be labeled with the stage that it applies).
9. Planning.
10. Planning and preparation.
11. Preparation.
12. Preparation and execution.
13. Planning, preparation and execution.
14. Execution.

Table 1-4. Section or squad leaders briefing checklist

Section or Squad Leaders Briefing Checklist
The below listed checklist contains information the section or squad leader must receive from the platoon leader to accomplish his mission. 1. Mission. 2. Fire unit location and alternate. 3. Primary target line. 4. Sector of fire. 5. Route and alternate route. 6. Air Defense warning (ADW), local Air Defense warning (LADW) and State of Readiness. 7. Weapons control status (WCS). 8. Hostile criteria. 9. Platoon rally point. 10. Friendly units in AO. 11. Platoon FRAGORD, OPORD and rehearsal location and time. 12. Rules of Engagement (ROE). 13. Mission-Oriented Protective Posture. 14. EW plan. 15. Air control measures in effect.
ADW air defense warnings AO area of operations FRAGORD fragmentary order LADW local air defense warning OPORD operation order ROE rules of engagement WCS weapons control status

Table 1-5. Position occupation checklist

Position Occupation Checklist

This checklist contains the points-of-consideration information the section or squad leader must receive from the platoon leader to accomplish the mission.

1. Does the area have the following features?
a. Sufficient area for dispersion.
b. Alternate exit and entrance routes.
c. Easily defended against ground attack.
d. Easily recognizable and known to all sections.
e. Good communications with higher, lower, and supported units.
f. Good observation.
g. Reconnaissance prior to occupation.
h. Coordination with adjacent unit prior to occupation.
i. Area secured prior to occupation; listening post and observation post established at main entrance.
j. CBRNE detection, monitoring, and survey team check the area prior to arrival.
k. Ensure a closure report is submitted per standard operating procedure (SOP).
l. When necessary, establish vehicle dismount point with ground guide.
m. Place CBRNE alarms.
n. Establish occupation timeline (consider mission and its relation to scheme of maneuver and supported unit timeline).
o. Fill gaps in the position with individual fighting positions.
p. Ensure each fire unit coordinates with the unit to the left and right.
q. Ensure each position has a range card.
r. Ensure listening posts/observation posts have the following:
s. Cover and concealment.
t. Communications.
u. Range card (Stinger/M3P).
v. Sufficient distance from position to provide early warning.
w. Camouflage positions and vehicles.
2. Plan and conduct the following:
a. Ammunition resupply.
b. Petroleum, oils, and lubricants (POL) resupply.
c. Water resupply.
d. Ration resupply and feeding.
e. Maintenance support.
3. Evacuation plan.
a. Submit necessary reports.
b. Enforce noise, light, and litter discipline.
4. Brief everyone on the following:
a. Tactical situation.
b. Mission.
c. Challenge and password.

CBRN chemical, biological, radioactive, nuclear
SOP standard operating procedure

Table 1-6. Platoon operation checklist

Platoon Operation Checklist

1. Use the 1/3 - 2/3 rule.
2. Perform backward planning.
3. Properly consider factors of mission, enemy, terrain and weather, troop and support available, time available, civil considerations (METT-TC) in planning.
4. Present recommendations to commander or S-3 regarding allocation of assets.
5. Actively participate with support unit staff during planning process.
6. Plan platoon rehearsal (location, time and duration).
7. Ensure supported force AD plan is doctrinally sound.
8. Template planned weapons coverage.
9. Properly analyze enemy air avenue of approach.
10. Ensure AD plan compensates for system limitation.
11. Ensure AD plan compensates for maintenance and combat losses.
12. Ensure AD plan supports commander's scheme of maneuver and intent.
13. Accomplish contingency planning.
14. Address AD support actions, refueling, and maintenance
15. Address AD of supported force contiguous, refueling and movement operation.
16. Discuss night and limited visibility operation.
17. Discuss Avenger ground support role.
18. Address AD plan in assembly area.
19. Address receipt and dissemination of WCS and ADW.
20. Address early warning and sensor management.
21. Address employment of air guards and engaging enemy air with organic weapons.
22. Perform adequate reconnaissance to position occupation,
23. Provide AD for orders group during planning.
24. Plan coverage for choke points and passage point.
25. Consider pre-stock of ammunition.
26. Coordinate weapon emplacement positions with commander who owns the ground make provisions for alternate and secondary positions.
27. Plan medical evacuation of casualties through supported unit or ADA battery.
28. Plan primary target lines, areas of search and sectors of fire.

AD	air defense	METT-TC	mission, enemy, terrain and Weather, troops and support available, time available civil consideration
ADA	air defense artillery		
ADW	air defense warning		
WCS	weapon control status		

Table 1-6. Platoon operation checklist (continued)

Preparation Phase
1. Brief all personnel on the OPORD at once. 2. Extractor address-pertinent elements of supported unit OPORD in platoon OPORD. 3. 1/3 of available time allocated to planning and 2/3 of available time allocated for execution. 4. Move personnel into position or perform face-to-face coordination for weapon emplacement with supported force. 5. Verify that AD personnel and supported force elements use proper camouflage. 6. Verify that AD personnel are prepared to defend at first light. 7. Verify that pre-combat checks and preventive maintenance checks and services are accomplished, Avengers are bore-sighted and identification, friend or foe (IFF) are programmed. 8. Verify that range stakes and range cards are properly prepared. 9. Verify that initial and ongoing liaison is conducted by AD squads end supported elements. 10. Check AD coverage of Task Force and or supported unit road march and preparation. 11. Verify complete dissemination and understanding of OPORDs with back briefs. 12. Verify that initial and ongoing liaison is conducted by AD squads end supported elements. 13. Check preparation of primary, alternate, and supplementary positions. 14. Verify request and receipt of engineer support. 15. Templated actual weapons coverage. 16. Conduct rehearsals at all echelons. 17. Conduct back briefs. 18. Verify that Avengers era dug in. 19. Verify that pre-stocked ammunition is dug in. 20. Verify that adjacent unit coordination has been accomplished. 21. Verify dissemination of engineer obstacle overlay (Are clear lanes and location of minefields known?). 22. Conduct coordination for medical evacuation on the ground with supported unit.
AD air defense IFF identification friend or foe OPPRD operations order

Table 1-6. Platoon operation checklist (continued)

Execution Phase
1. Immediately pass any enemy information to the platoon.
2. Platoon kept information on disposition of squads and supported unit.
3. Adequate communications maintained to facilitate mission command,
4. Changes in WCS, ADW and LADW passed to the platoon and maneuver elements.
5. “Flash” attack warning made to the platoon and maneuver elements.
6. AD engagement reports, situation reports and spot reports sent in a timely fashion.
7. Adjustments made to compensate for maintenance and combat losses.
8. Hostile aerial platform properly engaged by AD weapons.
9. Hostile aerial platform properly engaged by organic non-ADA weapons.
10. Supported unit reacting appropriately to enemy air attack massing small arms fire.
11. Platoon reacting properly to artillery.
12. Platoon properly responding to CBRN (Chemical, Biological, Radiological or Nuclear) conditions.
13. Combat reload accomplished.
14. Movement techniques consistent with supported movement.
15. Chock point properly defended.
16. Avenger .50-caliber fires controlled and properly executed.
17. Sound target engagement techniques employed.
18. Chain of command functioning.
19. Individual squads maximizing use of time.
AD air defense ADW air defense warning CBRN chemical, biological, radiological or nuclear LADW local air defense warning WCS weapons control status

Table 1-6. Platoon operation checklist (continued)

Reorganization Phase
1. Platoon organization reestablished. 2. FRAGORD issued for follow-on mission. 3. Ammunition status reviewed; cross leveling accomplished. 4. Class III supplies obtained. 5. Casualties treated and evacuated. 6. Search and scan position improvement continued during reorganization. Parent battery notified to provide maintenance support or to pass engagement reports. Battery or supported unit updated on personnel status; Class I, II, IV and V supplies; and combat capability. Crews performing preventative maintenance checks and services.
Consolidation
1. Platoon reestablishes local security. 2. Platoon reestablishes AD sector of fire. 3. If necessary, the platoon repositions to over watch the designated objective. 4. Platoon leader prepares and issues FRAGORD for specific tasks or to continue the mission.
AD air defense FRAGORD fragmentary orders

Capabilities

1-13. Each Avenger system is a fire unit and is capable of firing all fielded versions of the stinger missile. It can launch a Stinger missile or fire the M3P Machine Gun while on the move or from the remote configuration via the remote control unit outward 50 meters from the fire unit.

1-14. The Avenger system can acquire and track targets in any adverse environment, e.g., darkness, dust, smoke, or adverse weather, using a sensor package that consists of Forward-Looking Infrared (FLIR), optical sight, Identification Friend or Foe (IFF), and laser range finder. The optical sight provides enhanced acquisition capability in various environments such as night, smoke, rain, and background clutter or hazy conditions. The optical sight creates a heads-up-display that allows the gunner to acquire targets through the canopy. The IFF identifies aircraft equipped with Mode 3 or Mode 4 programmed transponders. The laser range finder determines if the target is within the normal range of the missile and facilitates target engagement at maximum range. If the Avenger system becomes degraded or non-mission capable, the onboard Stinger missiles can be converted into a man portable configuration with the addition of grip stock.

Chapter 2

Mission Command

This chapter discusses the individual elements that compose the mission command for Avenger units. It also covers the command and support relationships of the communication system, as well as the planning sequence, communications, and synchronization of the battlefield within the system. Avenger battalions are equipped with command communications intelligence system and have command nodes that are normally located at the battery level.

AVENGER MISSION COMMAND

2-1. Avenger operations adhere to the Joint force airspace control measures while applying the mission command principles and procedures. The ADA command structure in the Joint operations area provides the framework for planning, coordinating, and executing these operations.

2-2. Mission command of air defense artillery must accomplish two events listed below:

- Engagement of hostile aircraft while providing for protection of friendly aircraft.
- Integration of all ADA weapons into a cohesive force so that the appropriate level of effectiveness will be generated but overkill will be avoided.

MISSION COMMAND WARFIGHTING SYSTEMS

2-3. Command is the authority that a commander in the armed forces lawfully exercises over subordinates by virtue of rank or assignment. The mission command warfighting systems encompass the arrangement of personnel; networks; information systems; processes and procedures; and facilities and equipment that enable commanders to conduct operations. The following two factors make integrating Avenger teams especially challenging:

- A large number of Avenger teams spread out in an AO.
- Teams are highly mobile and they remain in a position for only short periods.

DECISIONMAKING

2-4. Commanders are the most important participants in the operations process. While staffs perform essential functions that amplify the effectiveness of operations, commanders drive the operations process through understanding, visualizing, describing, directing, leading, and assessing operations. Accurate and timely running estimates are key knowledge management tools that assist commanders in driving the operations process.

2-5. Depending on the type of command relationships between units and elements, command responsibility and authority varies. The following factors into a command relationship:

- *Organic.* Assigned to and forming an essential part of the military organization as listed in its table of organization for the Army, Air Force and Marine Corps and are assigned to the operating forces for Navy (JP 1-02).
- *Assign.* To place units or personnel in an organization where such placement is relatively permanent, and/or, where such organization controls and administers the units or personnel for the primary function, or greater portion of the functions, of the unit or personnel (JP 1-02).

  Attached - The placement of units or personnel in an organization where such placement is relatively temporary. 2. The detailing of individuals to specific functions where such

functions are secondary or relatively temporary. When an Avenger unit is attached, the commander provides administrative and logistic support to the attached Avenger unit.

- *Operational Control* -The authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives and giving authoritative direction necessary to accomplish the mission. (JP 1-02).

SUPPORT RELATIONSHIPS

2-6. There are four support relationships: DS, GS, general support-reinforcing (GS-R), and reinforcing. The following information applies:

DIRECT SUPPORT

2-7. Direct support is a support relationship requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance (ADRP 5-0). ADA units in a direct support role provide dedicated support to a specific element of the force, which has no organic AMD capability. Supporting ADA units coordinate their movement and positioning with the supported unit. An ADA platoon, for example, may be placed in direct support of a mechanized task force. The platoon will provide dedicated support to the task force, and the platoon leader will position the platoon in accordance with the task force commander's concept of the operation. Additionally, a Patriot battalion can be placed in direct support of the Joint Force Air Component Commander (FM 3-01).

GENERAL SUPPORT

2-8. DA units in a general support role provide support to the supported force as a whole and not to any particular subordinate echelon unit or element. General support is commonly established to protect theater, corps, or division level assets. The ADA commander positions ADA units in general support.(FM 3-01)

GENERAL SUPPORT-REINFORCING

2-9. ADA units with general support-reinforcing missions provide support for the force as a whole and, secondarily, augment the support provided by other ADA units. ADA units must coordinate with the augmented ADA units to reinforce the coverage of assets in the area of operations.(FM 3-01).

REINFORCING

2-10. ADA units in reinforcing roles augment the coverage of other ADA units and strengthen AMD capabilities of the force. Reinforcing ADA units are positioned to protect one or more of the reinforced units' priorities as specified by supported ADA unit commanders (FM 3-01).

2-11. Force operation functions are required for planning; coordinating and preparing for; and sustaining the total air defense mission. The situation analysis function continuously collects and evaluates all available information on friendly and hostile forces, including the intelligence tasks of continuous intelligence preparation of the battlefield (IPB) and situation development. The defense planning function develops and assesses various options and produces a preferred course of action (COA). The coordination function implements the coordination and cooperation required for developing, distributing, and executing the alerting process. The routine staff function supports the overall operations process.

2-12. Force operations provide information to facilitate engagement operations activities, and are therefore mutually supportive. For example, unit boundaries and air control measures maintained and passed over force operations terminals are entered into engagement operations terminals.

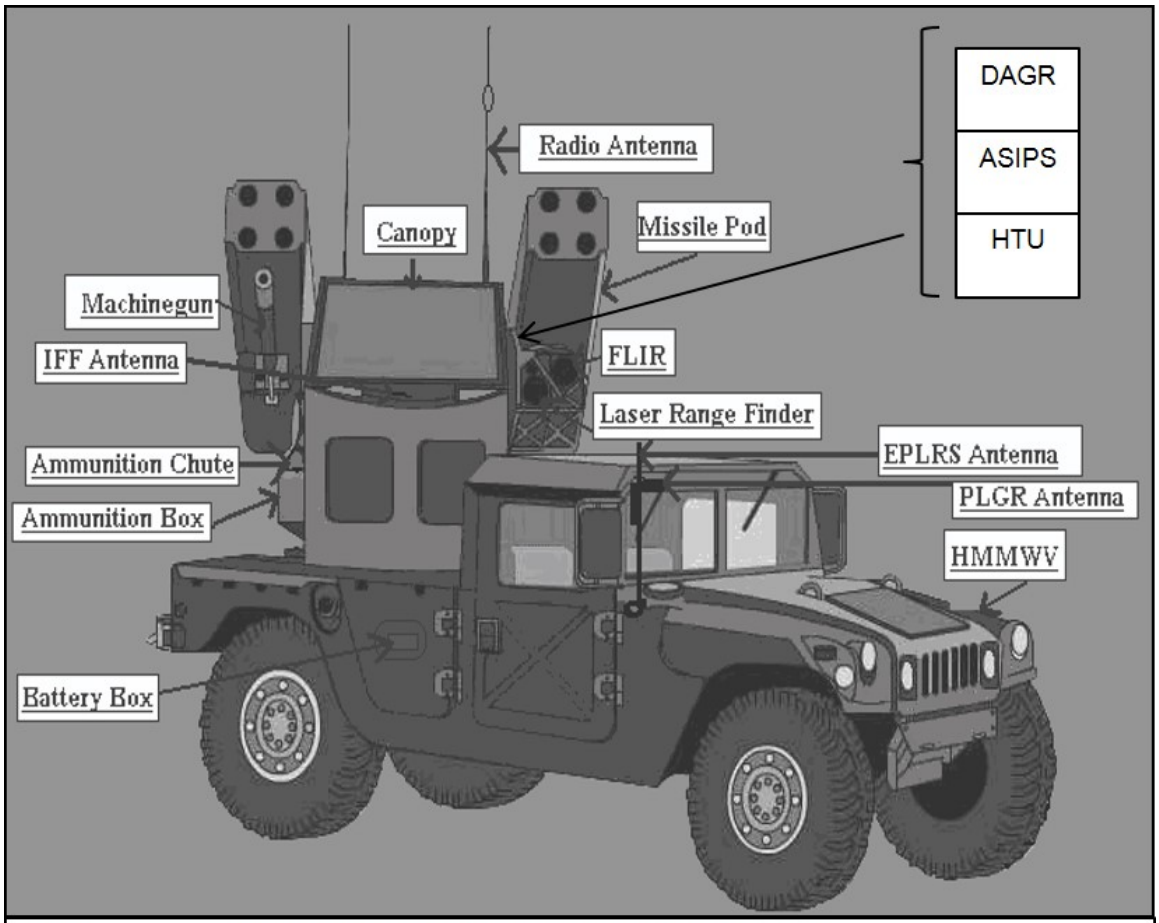
AVENGER ON-BOARD COMMUNICATION COMPONENTS

2-13. The Avenger on-board communications equipment consists of the following equipment:

- AN/PSQ-6 Enhanced Position Location Reporting System (EPLRS)
- AN/PSN-11 Precision Lightweight Global Positioning System (GPS)

- Receive/transmit (R/T)-1439/VRC-91(A)
- AM 1780/VRC Audio Frequency Amplifier
- R/T 1523E Advanced Single Channel Ground and Airborne Radio System (SINCGARS) Improvement Program
- CP-1995/U Handheld Terminal Unit
- Combat vehicle crewman helmet
- C-2298/VRC control box
- AS-1729/VRC antenna
- Approximate locations in figure 2-1 on page 2-4

2-14. The AN/VSQ-2 EPLRS is located in the cab of an Avenger as shown in figure 2-1. The EPLRS provides secure, jam-resistant, near real-time data communications support for the five Battlefield Functional Areas of the Army Tactical Command and Control System. Because of the real-time unit positioning data supplied by EPLRS, accurate battle management is now possible. This allows the commander to not only move forces forward, but to also quickly and accurately counter opposition moves. EPLRS is a time division multiple access (TDMA) system using a frequency hopping, spread spectrum waveform in the ultra-high frequency band. It incorporates internal communications security devices. Additionally, EPLRS provides battlefield situational awareness (SA) to both the user and to their higher headquarters. This information greatly enhances understanding by providing commanders with the location of friendly units, a dynamic representation of the forward line of own troops (FLOT) and abbreviated situation reports for conditions and identification of adjacent equipped units.



ASIP	Advanced SINCGARS Improvement Program
DAGR	Defense Advanced Global Positioning Receiver
EPLRS	Enhanced Position Location Reporting System
FLIR	Forward Looking Infra-Red
HTU	handheld terminal unit
IFF	identification friend or foe
PLGR	Precision Lightweight GPS Receiver

Figure 2-1. Avenger onboard communications components

ADVANCED SYSTEM IMPROVEMENT PROGRAM RADIO

2-15. This radio is located in the turret of the Avenger fire unit (FU) and provides the capability of transmitting and receiving voice, as well as analog or digital data up to 16 kilobytes per second. SINCGARS employs electronic counter-countermeasures to minimize vulnerability to enemy electronic warfare and provides secure communications with an integrated communications security device. This terminal permits the setting of frequency, hop-set, and other technical aspects of the SINCGARS radio.

DEFENSE ADVANCED GLOBAL POSITIONING RECEIVER (DAGR)

2-16. All Forward Area Air defense (FAAD) C3I and Avenger systems interface with the Defense Advanced GPS Receiver (DAGR) (see figure 2-2 on page 2-5). DAGR can also be located with the Soldier or mounted in the Avenger while in route with an external antenna to obtain time, position, and elevation information. The DAGR is a smaller, improved version of the earlier Precision Lightweight GPS

Receiver. The handheld DAGR is used by the Department of Defense and select foreign military services. It is a military-grade, dual-frequency receiver, and has the security hardware necessary to decode the encrypted (Y)-code GPS signal. The DAGR features the below listed items:

- Graphical screen, with the ability to overlay map images.
- 12-channel continuous satellite tracking for "all-in-view" operation.
- Cold start first fix in less than 100 seconds.
- Extended performance in a diverse jamming environment.
- 41 decibel J/S maintaining State V tracking.
- 24 decibel during initial code acquisition.

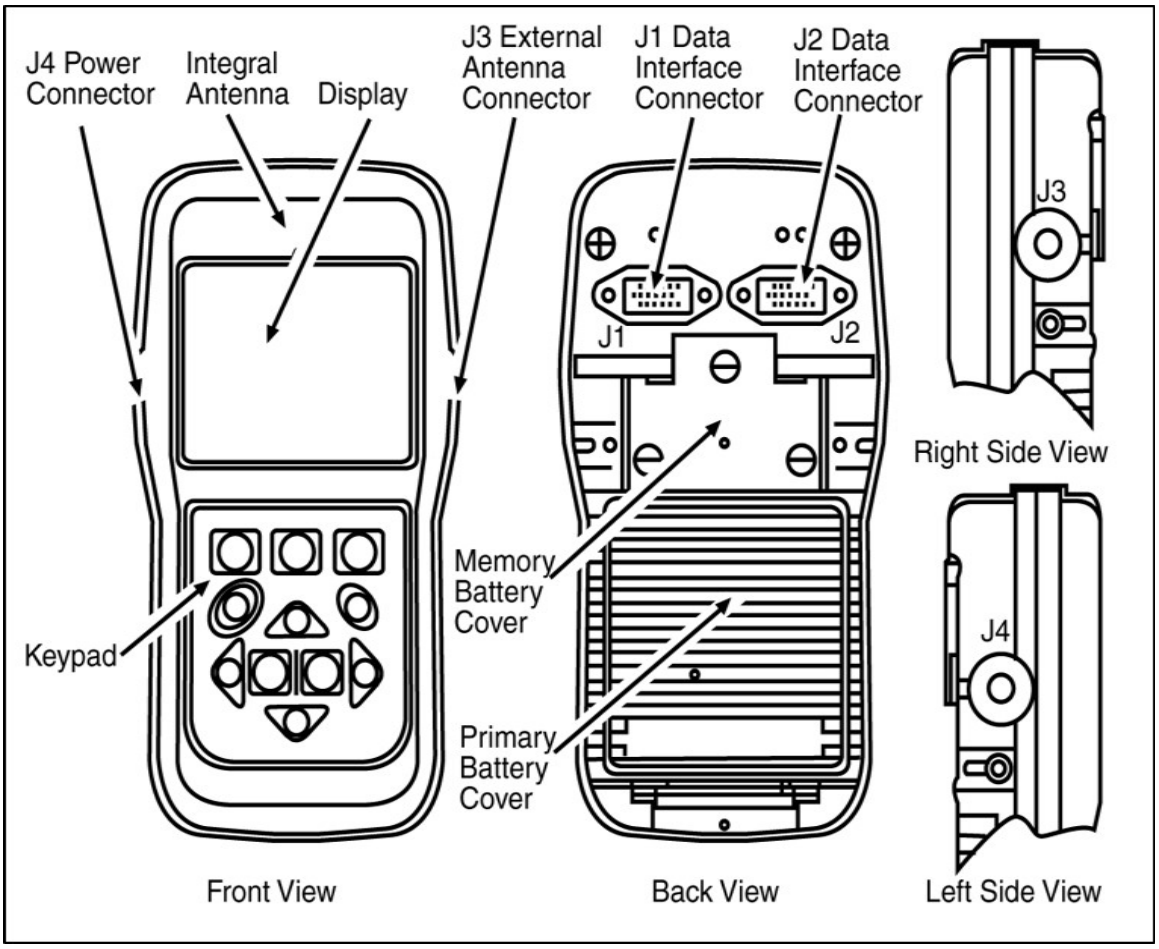


Figure 2-2. Defense Advanced GPS Receiver (DAGR)

TACTICAL INTERNET

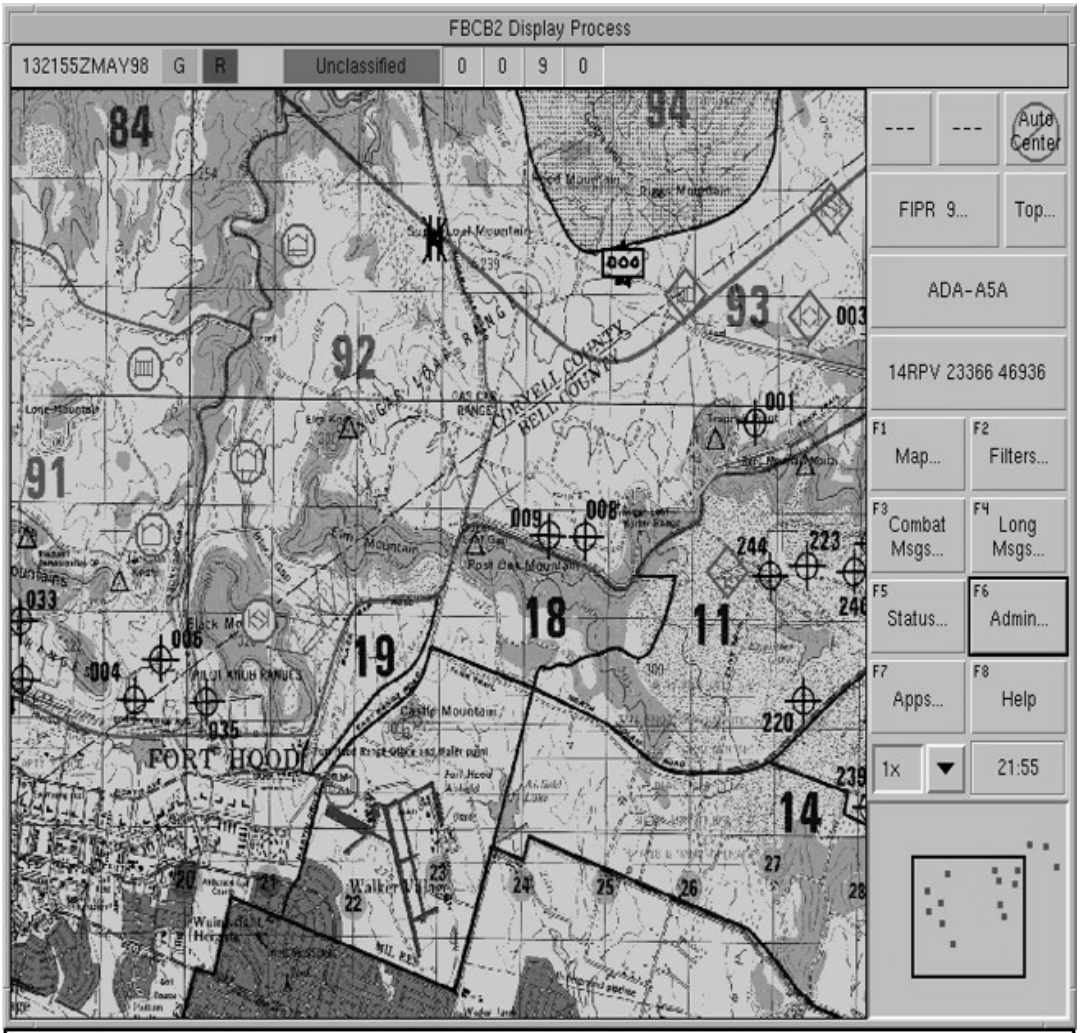
2-17. The tactical internet extends the Army Battle Command System (ABCS) to the Soldier and weapons platform by passing command and SU data. The tactical internet must provide tactical, mobile, simultaneous multi-band, multi-mode, voice and data (and possibly video) communications while providing routing and network services. The tactical internet must support the exchange of secret and unclassified data. The tactical internet, as referred to here, is used to describe the communication pathways only. It utilizes the tactical multi-net gateway, which interfaces with the data server to provide connectivity to the warfighter information data network. The warfighter information network is an evolving integrated mission command system that is comprised of commercially-based, high technology information and communications systems. It is designed to increase the capacity and velocity of information distribution throughout the AO in order to gain information dominance. The warfighter

information network will support the Soldier in the 21st century with the means to provide sustaining base information services to deployed units. The warfighter information network will maximize secure information services for the Soldier and support the power projection force from sustaining base operations, to the foxhole. The tactical internet requires a network, not just a radio designed to support known and emerging requirements. Today it integrates the legacy SINCGARS and EPLRS radio.

FORCE XXI BATTLE COMMAND - BRIGADE AND BELOW

2-18. The Force XXI Battle Command-Brigade and Below (FBCB2) computer uses the tactical internet to tie the force together. The tactical internet's primary function is to provide a more responsive information exchange capability supporting mission command at brigade and below. The tactical internet is a collection of interconnected (hardware & software) FBCB2 computers that are linked to tactical radios that provide seamless SU and mission command data exchange. The tactical internet interfaces with Army Tactical Command and Control System to allow integration with the total ABCS and is focused on enhancing necessary information for the battery commander at brigade and below. The digital system supports tactical mission requirements and supports the following capabilities (see figure 2-3, page 2-7):

- Real-time SA for the commander, staff, subordinate leaders, and Soldiers.
- Shared common picture of the battlefield.
- Graphical displays.
- Friendly and enemy unit locations.
- Integrated logistics support.
- Communications, electronic interfaces with host platforms.



ADMIN	administration
APPS	applications
ASA	all source analysis
FBCB2	Force XXI Battle Command Brigade and Below
FIPR	flash, immediate, priority, routine
MSGS	messages

Figure 2-3. FBCB2 computer graphical display

2-19. The FBCB2 computer consists of FAAD C3I software for embedded air and ground platforms, hardware and software for non-embedded air and ground platforms, platform interfaces, and supporting communications systems. It provides SA and mission command at all echelons. Specific operating procedures are contained in the FAAD C3I digital operators guide (ABCS Smart Book), which can be found on the Warrior-T website.

AIR DEFENSE

2-20. ADA systems vary in capabilities and limitations. This variation impacts substantially on short-range ADA resource allocation and its battlefield placement. This information is unclassified and is provided solely for planning purposes.

AIR DEFENSE PLANNING

2-21. Planning begins with the receipt of a new mission from the ADA brigade S-3 or the division G - 3 depending on the type of battalion. The Corps AMD element and the division both notify their battalions of new missions. Parallel planning must begin at this time. They begin their estimates and annexes to the Corps and division operation order (OPORD). The Division G-3 AMD officer depends heavily on the Corps or division representative for accurate and timely information during this stage of planning. The Division G-3 AMD officer is the divisional air defense officer and is directly responsible to the division commander for the air defense plan.

2-22. Armed with a partially completed IPB a task organization, and a concept for a typical situation, the battalion commander immediately begins mission analysis. The Avenger battalion follows the mission analysis process as outlined in ADP and ADRP 5-0. The end product is unit's restated mission, initial guidance, mission analysis brief, intelligence estimate, and the initial warning order (WARNORD). The ADA battalion commander should consider the best place for the Tactical Operations Center (TOC) and themselves. The location(s) should be selected to best support the batteries and the Avenger scheme of operation. Examples for the ADA battalion may include a reinforced ADA battalion TOC, division support command; Corps support command, or the ADA brigade TOC. While integrating the IPB, the commander issues guidance to the staff and suggests courses of action to consider.

AIR DEFENSE PLANNING IN A MIXED DIGITAL AND ANALOG ENVIRONMENT

2-23. Orders, overlays, and graphics are the three primary types of products used for air defense planning. The Corps and division staff section can create these products at the AMDWS or load them onto the laptops in the TOC as Power Point slides for dissemination over the local area network. This method allows non-digital units to derive these products as paper copies when needed. The Avenger unit should maintain computer backup files of the higher headquarters OPORD along with the higher headquarters Annexes, as well as their own order on file. The ADA battalion's Air Defense Tactical Operations Center has the capability to send these and other appropriate graphics to subordinate units via AMDWS using the AMDWS-to-AMDWS link regardless of the ABCS software version or equipment being used. In analog or partially digitized units, AMDWS works well when used in a "stovepipe" mode, or internal to the ADA battalion, and works especially well when the unit is fully digitized. When possible, the S-3 should go to the planning meetings, otherwise, these products could be left out.

2-24. The air defense portion of the OPORD, Annex D (Fires), will include information and references to air routes into the division AO, number of aircraft by air route, named area of interest (NAI), target area of interest, and number of aircraft the division can expect. The ADA S-3 assigns the sensor platoon leader the task of determining where to position the 6 sensors, when to move, and other pertinent factors. This information is published in the division reconnaissance & surveillance (R&S) plan. By meeting this key gate in the planning cycle, battery leaders can ensure key elements of planning make the order before the brigade disseminates it down to the subordinate units. If they miss this gate, brigade determines how the batteries design their air defense and EW coverage plans.

2-25. In an immature Joint operations area, detailed threat information may not be available. Consequently, the threat template and decision support template must be produced in the absence of real time data. Regardless of the maturity of the AO and IPB, their goals are the same. The S-2 must help the commander and staff visualizes the battlefield in time and space. The S-2 must also provide a system for planning how to anticipate the enemies' actions and seize the initiative. When a change of mission is received, the S-2 should accompany the battalion commander to the TOC to assist in the military decision making process (situation permitting). The commander's presence at that location makes any refinements immediate and enables the commander to work directly with the assistant chief of staff, intelligence to ensure that the most current information is provided.

DIGITAL OPERATIONS DISPLAY

2-26. The digital operations overlay is somewhat different and used to record a scheme of for any given tactical operation. The overlay has several uses based on where the battery is in the troop leading process and the type of mission it is assigned. The overlay is developed over the terrain database depicted on the digitized tactical displays. Once a digital overlay has been finalized, the completed automated overlay is distributed digitally to subordinate leaders and FUs prior to the order to provide an opportunity to review the plan and post the overlay to their maps.

BATTALION - DECISION SUPPORT MATRIX (DSM)

2-27. Next, the staff discusses each contingency. They simultaneously develop the sensor plan under the staff supervision of the S-2, and make adjustments based on the Army airspace control plan. Plans are developed for the attack of enemy aviation logistics and command and control systems. The staff then conducts a wargame to visualize the upcoming operation based on potential enemy actions, develops decisive points (DP), and identifies them on the decision support matrix. However, the staff must assess friendly capabilities versus enemy intentions to determine what courses of action the enemy will most likely adopt and identify these as DPs.

2-28. Once the decision support matrix process is complete, the staff can publish the decision support template (see table 2-1 on page 2-10). This matrix captures the planning and wargaming up to this point. The DPs correspond to the decision support template, and the event associated with each DP is given. In the warfighting functions, a particular unit’s activity is read as it relates to the DP and the related event.

2-29. A decision support matrix allows the staff to visualize the AO, courses of action, and develop a synchronized response to varied enemy actions. The Battalion DSM enunciates the commander's intent. A true understanding of the concept of the operation has to come from publication of the Battalion DSM and the commander's intent. The following illustration shows an example of the commander's intent from the OPORD (see table 2-2, on page 2-11).

Table 2-1. Battalion DSM

Decision Point	1	2	3	4	5
Event	UAV activity VIC PL Illinois	Enemy squad size elements VIC PL Nebraska	Ground scouts report BN sized elements VIC PL Nebraska	Receive enemy artillery fire vic PL Delaware	Engage enemy main body VIC PL Nebraska
Intell	Ground scouts report enemy UAS vic PL illinois	Scouts rpt enemy units in groups of 3 to 5 recon VIC PL Nebraska	Scouts report BN sized element at NAI 1	Forward units intense fire VIC PL Delaware	Scouts report Bde sized elements VIC NAI 1
A Battery	DS to 1 BDE ADW Yellow WCS Hold LADW Snowman SOR 3 DIV Main Effort	ADW Yellow WCS Tight LADW Snowman SOR 2 Cross PL Ohio	ADW Red WCS Tight LADW Snowman SOR 2 Cross PL Maine	No Change	ADW Red WCS Tight LADW Lookout SOR 1
B Battery	DS to 2 BDE ADW Yellow WCS Hold LADW Snowman SOR 3 DIV Support Effort	ADW Yellow WCS Tight LADW Snowman SOR 2 Cross PL Ohio	ADW Red WCS Tight LADW Snowman SOR 2 Cross PL Maine	No Change	ADW Red WCS Tight LADW Lookout SOR 1
C Battery	DS to 3 BDE ADW Yellow WCS Hold LADW Snowman SOR 3 DIV Reserve	ADW Yellow WCS Tight LADW Snowman SOR 2 Cross PL Ohio	ADW Red WCS Tight LADW Snowman SOR 2	No Change	ADW Red WCS Tight LADW Lookout SOR 1
D Battery	GS to DIV ADW Yellow WCS Hold LADW Snowman SOR 3	ADW Yellow WCS Tight LADW Snowman SOR 2	ADW Red WCS Tight LADW Snowman SOR 2	No Change	ADW Red WCS Tight LADW Lookout SOR 1
EW	Integrates ADA scouts into Bde's R and S plan, continue beyond PL Ohio	Continue sensing beyond PL Main FWD	Continue sensing beyond PL Delaware FDW	Prepare for passage of lines	Occupy alt positions continue sensing NAIs 1 and 2
Comments	A and B battery prep to cross LD D Battery: provide area AD DIV rear	Counter-recon battle begins DIV trigger to cross LD	Screening force battle begins	Expect main body to follow artillery prep	Provide dedicated AD for four IN DIV, C Battery move FWD with DIV reserve

A/C	aircraft	ADW	air defense warning
BN	battalion	DS	direct support
EW	early warning	FWD	forward
GS	general support	IN	infantry
LADW	local ADW	LD	line of departure
NAI	named area of interest	PL	phase line
R&S	reconnaissance and surveillance	UAS	unmanned aircraft system
SOR	state of readiness	WAC	weapon control status
VIC	vicinity		

COMMANDER'S INTENT

2-30. The *commander's intent* is a clear and concise expression of the purpose of the operation and the desired military end state that supports mission command, provides focus to the staff, and helps subordinate and supporting commanders act to achieve the commander's desired results without further orders, even when the operation does not unfold as planned (JP 3-0). During planning, the initial commander's intent drives course of action development. In execution, the commander's intent guides disciplined initiative as subordinates make decisions when facing unforeseen opportunities or countering threats. Commanders develop their intent statement personally. It must be easy to remember and clearly understood by commanders and staffs two echelons lower in the chain of command. The more concise the commander's intent, the easier it is to recall and understand The Corps ADA element will conduct an abbreviated estimate for each COA with the G-3 plans. Later, once a COA is approved, the initial intent is updated if necessary as the commander's intent within the annex. This is performed within the Corps and division-integrated staff planning process. The battalion commander will then issue guidance to the battalion staff.

Table 2-2. Commander's intent example

My intent is to deny surveillance of 1st Brigade's movement along AXIS RED in Phase 1 and the division reserve, and to protect the force during the attack to seize OBJ Texas. I will accept risk of surveillance in 2nd Brigade's zone and weigh counter RISTA asset in the North. I want to reinforce 3rd Brigade with one platoon as they cross the river and continue the attack.

OBJ	objective
RISTA	reconnaissance, intelligence surveillance, and target acquisition

AVENGER BATTALION REHEARSALS

2-31. The Avenger battalion rehearsal is conducted to ensure understanding of the plan and to update the synchronization matrix based on changes made at force rehearsals. The planning process above is an idealized solution. Commanders must realize that unit operations are not standardized, and the air defense battalion may be forced to obtain the information it requires and still issue a timely concept while adhering to the 1/3 - 2/3 planning rule.

2-32. Upon completion of the supported force's rehearsal, the battalion should conduct its own rehearsal. The battalion commander, battery commanders, S-1, S-2, S-3, S-4, S-6 and ADA coordinator should participate. If time prevents the assembly of these personnel at a location, at a minimum, the battalion commander should conduct the rehearsal on the battalion command net based on mission, enemy, terrain and weather, troops and support available, time available and civil considerations (METT-TC).

AUTOMATION AND SYNCHRONIZATION MATRIX

2-33. Automation. TOCs are completely digital in today's Army. All files are being sent via email, and hung on portals and unit web pages. Plans and graphics are being shared instantly. Leaders talk live, in real-time from anywhere in the world via voice over internet protocol technology. Mission command systems will enable electronic distribution and receipt acknowledgment of the following:

- WARNORD.
- COA sketches and logistics status.
- Commander's intent.
- Aerial.
- Higher headquarters OPORDs, FRAGORDs, and operation plan concept format.
- Subordinate OPORDs, FRAGORDs, and WARNORDs.

2-34. The automated TOC must integrate the automatic capabilities to enhance and speed the planning process. The commander's mission analysis briefing can be performed using the resident planning and logistics software; subordinate elements will have the same information.

2-35. A synchronization matrix arranges activities in time and space to mass at the decisive point.

2-36. The battery commander will develop a synchronization matrix during the planning process (see table 2-3 on page 2-12). Using the matrix, the battery commander decides how to fight the threat, organize, and allocate forces for combat.

2-37. The information gained is used to complete the matrix, running estimates, and the commander's intent, purpose, and concept. The battery commander synchronizes the following actions:

- Organizing for combat.
- Monitoring platoon planning.
- Monitoring the battle and directing EW.
- Facilitating support and sustainment operations.

Table 2-3. Synchronization matrix

Time/Event	H-24 hours	H-Hour	H+24 hours
Enemy or Adversary Population	Monitors movements	Defends from security zone	Commits reserve
	Orderly evacuation from area continues		
Decision Points	Conduct aviation attack of OBJ Irene		
Control Measures			
1st BCT	Move on Route Irish	Cross LD	Seize on OBJ Irene
2nd BCT	Move on Route Longstreet	Cross LD	Seize on OBJ Rose
3rd BCT			FPOL with 1st BCT
AVN Bde	Attack enemy reserve on OBJ Irene		
R and S			
Reserve			
Intelligence			
Fires	Prep fires initiated at H-5		
Engineer			
AMD			
Sustainment			
Mission Command		Main CP with 1st BCT	
Close Air Support			
Electronic Warfare		Enemy command and control jammed	
Host Nation			
Interagency			
NGOs		Begin refugee relief	
Note: The first column is representative only and can be modified to fit formation needs.			

AMD	air and missile defense
AVN BDE	aviation brigade
BCT	brigade combat team
CP	command post
FPOL	forward passage of lines
LD	line of departure
NGO	non governmental organization
OBJ	objective

2-38. The DSM may be adjusted based on brigade rehearsals. In addition, Avenger adjustments from the platoon leader coordination are made to the DSM. The battery commander's initial DSM provides guidance to the platoon leaders about the following (see table 2-4 on page 2-14):

- General Avenger plan and scheme of maneuver.
- Command, control, communications, computers, and intelligence (C4I)
- Communications plan.
- Ground and air threat.
- Avenger sensor plan.
- Areas that the platoons should be employed.
- Enemy aviation facilities targeted by brigade.
- Airspace control plan.
- Logistics plan.
- Environmental considerations.

2-39. Battery commanders must ensure platoon leaders establish time lines that support the battery and air defense unit timelines. Total battery and platoon timeline synchronization is unlikely, but similar timeline events will aid the battery commander and platoon leaders in supervising execution.

2-40. For example, by ensuring platoon leaders have conducted back briefings and resolved misunderstandings, the battery commander can ensure synchronization of assets. During the preparation phase, the battery commander verifies that the platoons have linked up with their force, and monitor the platoon's troop leading procedures, and rehearsals. The commander also ensures that the platoons complete their pre-combat inspections, assisted by the battery first sergeant.

Table 2-4. Avenger battery DSM

Decision Point	1	2	3
Event	Indications of intelligence of impending heliborne operations in the AO	Enemy aerial platforms utilize AAA3	Enemy reaches DP, Bde conduct CATK along AXIS MAKAHA with TF 1-27
1st Platoon	Orient NAI 4	Orient AAA 3	No charge
2nd Platoon	Conduct LZ denial of LZ Sunset, orient NAI 1 and 2	No charge	DS TF 1-27
3rd Platoon	GS priority of protection to TF WINGS, orient NAI 3	GS, priority of protection to MSR Pipeline	No charge

AAA air avenue of approach
AO area of operation
CATK counter attack
DP decision point
DS direct support
GS general support
LZ landing zone
MSR main supply route
NAI name area of interest
TF task force

FINAL COORDINATION

2-41. Final coordination begins when the force conducts its OPORD briefing and rehearsal. The battery commander will conduct a commander's back brief during the rehearsal. Following the OPORD briefing and rehearsal, the battery commander should receive all changes and updates (if any), to the execution matrix made by platoon leaders. Following the force rehearsal, a battery rehearsal is conducted. The battery commander, platoon leaders, EW teams or sensor platoon representative and first sergeant, or other personnel (determined by METT-TC) participate in this rehearsal.

2-42. After the battery rehearsal, the battery commander participates in the battalion rehearsal as time permits, and updates the battalion commander on recent changes. The battalion commander updates the battalion plan or DSM based on changes from the platoon and battery rehearsals. While the ADA battalion conducts its rehearsal, the platoon leader conducts a rehearsal with the platoon's squads, sections and team leaders, and the personnel support group. The platoon should also rehearse with the unit and make final changes to the execution matrix. Following the rehearsals, if changes exist the platoon leader will issue a FRAGORD to capture those changes.

BATTERY PLANNING SUPPORT OF STATIC ASSETS

2-43. Battery commanders are responsible for defending protected assets within the Corps or division footprint and coordinate with the ADA battalion after receiving a change to the mission. The battery commander obtains the situation template from the S-2; and the OPORD from the S-3, along with the scheme of maneuver or DSM, including the IPB, airspace control, and Corps ADA element plans. The battery commander coordinates with the battalion S-4 for logistics support and links up with the defended asset commander to employ air defense protection. The battery commander develops an AMD plan and decides the platoon's AO using battle positions or designating platoon AOs. Additionally, the battery commander will identify engagement areas to cover a low-altitude air avenue of approach (AAA).

2-44. The platoon leader designs the platoon AO sketch around the employment guidelines, to protect the identified low altitude AAA. If the battery commander is convinced enemy aviation will use a given approach, the battery commander may employ an ambush by placing a FU, or FUs, in the expected AAA. A leader's reconnaissance should be conducted to verify the battery commander's plan and a back brief should take place on terrain that offers visibility to the battery AO. This sequence will allow the commander to adjust the plan as necessary to synchronize the platoon's fires, conduct a rehearsal to verify the commander's AMD plan, and determine if further adjustments are necessary. A defense of a static asset is planned primarily to counter a very low to low-level air attack and deny surveillance. These attacked assets may be targets of opportunity or pre-planned targets. Static asset defense lends itself to a balanced defense. With other international programs, the defense may be weighted, but there may be situations when the static asset is vulnerable in more directions than there are FUs.

AIR DEFENSE DESIGN CONSIDERATIONS

2-45. During degraded operations, Avenger teams can be employed further from the asset than non-degraded teams to achieve early engagement and defense in depth. Additionally, degraded Avenger teams can be sited perpendicular, as well as head on, to hostile incoming aircraft. The defense of a critical static asset is normally planned using a map. The following steps explain the planning techniques:

- Step 1: Define the AO (this is determined by higher headquarters).
- Step 2: Define the ground and air threat.
- Step 3: Determine critical assets. An airfield or a division support area covers a large area and may contain many assets. Certain assets will be more critical than others based upon their vulnerability. The commander may accept limited damage in some places and no damage in other places. An example of limited damage might be a runway that combat engineers can quickly repair. An example of unacceptable damage would be any attack on Class III (JP4) fuel bladders.
- Step 4**:** Determine AAA, NAIs, and target areas of interest (TAI). AAAs, NAIs, and TAIs identified during the IPB process should be synchronized with the information collection plan. Attack profiles must be identified in this step. The AAA may be "probable" or "forced."
- Step 5: Select tentative weapon locations. The commander selects tentative weapon positions. Battery commanders must ensure that weapon positions provide balance and mutual support if there is no known direction or air attack.
- Step 6**:** Conduct leader's reconnaissance. Make adjustments to the battery fire plan by identifying dead spaces and defense weaknesses affecting ground and air coverage.

2-46. The addition of Avenger to the defense allows a mix of weapons and greater mass against threat airborne platforms. Access to and utilization of Avenger permits early engagement and better mutual support of weapon systems to include night engagements.

COMMUNICATIONS

2-47. To effectively defend and protect airspace and ground forces, Avenger units require a reliable communications network that consists of different media that will collectively provide voice and data information exchange, as well as connectivity across the AO. The network must include internal, senior, joint and multinational exchanges, as well as communications with supported non-ADA units at

the unit level. The exact composition of this network, while based on organic resources, ultimately depends on force composition, structure, command relationship, and the METT-TC. Communications are normally established "from higher to lower," and "from supporting to supported." However, the commander may have to establish METT-TC peculiar communications support systems. Supporting communications systems may include the following equipment:

- Combat net radios, such as an improved high frequency radio (IHFR), single channel tactical satellite, and SINCGARS.
- Army Common User System (ACUS), mobile subscriber equipment, and Tri-Service Tactical Communications.
- Army Data Distribution System (ADDS) (such as the Multi-functional Information Distribution System and EPLRS) and broadcast radio (Global Broadcasting System).

RESPONSIBILITIES

2-48. The Avenger battalion has certain external nets that should be monitored to maintain a coordinated effort between the battalion and force. The S-2 will monitor the force intelligence net to maintain an updated intelligence picture and pass intelligence data to the assistant chief of staff, intelligence. The S-3 will operate mainly on the battalion command and force command nets. If the force is conducting a passage of lines with another force, the battalion TOC should monitor the adjacent ADA battalion command net. Leadership is a key element to an effective communications network. Leadership responsibilities at each level of command are as follows:

- The battalion commander is responsible for establishing and maintaining an effective communications network with the battalion and the battery-and-below levels. The S-6 has the task to plan and execute the specifics of this mission.
- The S-6 advises the commander on all areas of communications and electronic operations. The signal officer also plans and coordinates the installation, operation, and maintenance for communications systems necessary to support the organizational mission as mandated by METT-TC. Signal officers must also coordinate with both senior and lateral organizations for those mission essential resources in excess of organic authorizations. Some of the documents they prepare are the battalion signal operations plans and orders, signal operating instructions, radio frequency allocation plans, and requirements for communications security support.
- The battery commander is responsible for the operation, maintenance, training and use of communications systems organic to the battery. The battery commander ensures that the battery operates in the required battalion and unit nets. Responsibilities include reporting outages and taking action to restore disrupted communications. The following communication's connectivity guidelines apply:
  - Senior to subordinate.
  - Support to supported.
  - Lateral: left to right.
  - Reinforce to reinforce.
  - Unit conducting passage-of-lines to stationary unit.

2-49. All levels of command, staff sections, and Soldiers are responsible for protecting friendly information and information systems. Infrastructure elements to be protected are data, computers, communications systems, and support facilities. Protecting computer and communications systems from enemy intrusion, disruption and destruction, is an initial basic step in an overall protection approach.

COMMON COMMUNICATIONS EQUIPMENT

2-50. The ACUS, ADDS network, and the combat net radio are the 3 communication families under the umbrella of the ABCS serving the ADA battalion. The following items of equipment are organic to the battalion and battery modified table of organization and equipment, and they provide voice and data connectivity into the ACUS:

- Mobile Subscriber Radio Terminal, AN/VRC-97, provides mobile, secure voice, and data communications access to the ACUS. Uses an R/T-1539 to access an ACUS radio access unit and a KY-68 to secure the voice and data transmission.
- Digital Non-secure Voice Terminal, TA-954, TA-1035, TA-1042 provides voice and data connectivity into the ACUS. The TA-1035 is documented at Corps and below and provides both voice and data access. The TA-954 and TA-1042 are documented at echelons above Corps; the former provides voice only and the latter voice and data.
- Digital Subscriber Voice Terminal, KY-68 provides voice and data transmission security in a point-to-point mode through the ACUS or in conjunction with the R/T-1539 to provide transmission security.
- Facsimile Terminal, AN/UXC-7, provides a capacity to transmit and receive images throughout the ACUS. This device is dependent on a Digital Non-secure Voice Terminal with a data port, or a KY-68, to transmit and receive classified information.

2-51. The ADDS is the principle vehicle for selected data communications. It provides near-real-time data communications links for track distribution, sensor netting, unit location, and 2-way mission command of AMD systems. The following radios comprise the ADDS:

- Multifunctional Information Distribution System (MIDS). Secure, jam-resistant, near-real- time, TDMA frequency-hopping radios that provide the access to the Joint Data Network. The MIDS is a component of the AN/TSQ-182 FAADS command, control, communications, and computers subsystem that is documented at the ADA coordination section and the ADA tactical operations section. Via the MIDS the Joint Data Network provides precise participant location information and air track data from the following:
  - United States (U.S.) Air Force (USAF) E-3 Airborne Warning and Control System, tactical air control center, and CRC (Control and Reporting Center).
  - United States Navy E-2 HAWKEYE , AEGIS and tactical air control center
  - United States Marine Corps Tactical Air Operations Center/Tactical Air Operations Module.
  - Multinational producers.
  - Air Defense Artillery Task Force (PATRIOT battalion and Terminal High Altitude Air Defense [THAAD] battery).
  - Other ADA battalions.
- EPLRS, AN/VSQ-2. A secure, jam-resistant, near-real- time, TDMA frequency hopping radio that is the distribution media that interconnects ADA network operations. The EPLRS provides the means for ADA to have a netted and distributed air picture. EPLRS is also used to broadcast weapon control orders and an air picture to individual ADA batteries, platoons, squads, sections, and teams.
- Combat net radios provide the ADA battalion with mobile and survivable communications. The combat net radios network is a combination of frequency modulation systems for short-range amplitude modulation systems for long-range operations. The alternate mode systems are an alternative to the ACUS and provide redundancy to ADA battalion communications. The following radios are the combat net:
  - IHFR, AN/GRC-193 and AN/GRC-213. ADA units use IHFR-AM radios in the operation of the ADA coordination net and the IHFR-AM in the operation of the directed early warning (EW) net. The AN/GRC-213 is a short- range radio with a planning range of 50-miles. The AN/GRC-193 is a long-range radio with a maximum planning range of up to 2,000 miles. The KY-99 MINTERN provides transmission security for both radios.
  - SINCGARS, AN/PRC-119, AN/VRC-87, AN/VRC-88, AN/VRC-89, AN/VRC-90, AN/VRC-91, and AN/VRC-92. ADA units use SINCGARS for communications during mobile and static operations (as a back up to the ACUS) and as the primary communications means at the battery, platoon, section and FU levels. SINCGARS operates in both the single frequency and frequency hopping modes and has a planning range between 8 and 35 kilometers depending on the radio model used and type of antenna. SINCGARS may also be used to distribute the sensor data net information broadcast by command, control, communications,

and computers nodes to FUs not equipped with EPLRS. The AN/PRC-126 may substitute the AN/PRC-119.

- Single Channel Tactical Satellite Radio, AN/PSC-3, AN/VSC-7, LST-5 and AN/PSC-5. For ADA battalions, these radios will be used in Corps and division warfighter nets and may be used by ADA to broadcast EW information. Currently, there are several models of radios in the inventory, which will all be replaced by the AN/PSC-5 "Spitfire." The AN/PSC-5 operates in the Ultra High Frequency band in both the line-of-site and satellite modes and is demand-assigned multiple-access compliant.

RADIO NET OPERATIONS

2-52. The air defense battalion is required to operate in senior headquarters radio nets and supported unit radio nets; and operates its own organic radio nets to sustain and support both engagement operations and force operations network operations functions as shown in table 2-5 (page 2-19) for all related communication nets.

Table 2-5. Air defense communications nets

OPFAC / Radio Net	JDN Link 16	JICO Nets	HICON CMD Net	HICON ADLOG Net	HICON OPNS Net	HICON INTEL Net	XXI HICON Data Net	SPT'D MVR Net	ADCOORD Net (AM)	AD BN ADLOG Net	AD BN CMD-OPS Net	AD Data Net (EPLRS), or AD MSCS Net (SINC)	AD BTRY CMD-OPS Net	AD PLT CMD-OPS NET	AD SECT CMD-OPS Net
BN CDR			X				X				X				
BN CSM							X				X				
BN XO			X				X				X				
BN S3					X		X				X				
BN S4											X				
BN S6											X				
BN S1/4 Section				X						X					
BN S2/3 Section					X	X			X		X				
BN S6 Retrans' Team											X				
BN S6 Section							X			X					
BN ABMOC	X	X							X		X	X			
BN/BTRY ADCOORD Team							X[s]	X	X		X	X			
BN CHAP/UMT							X				X				
BN DMAIN AD Element	X	X						X	X		X	X			
BN DTAC AD Element															
BN SYS TECH							X[s]	X	X	X	X	X			
SEN Platoon Leader							X		X		X			X	
XXI SEN PSG											X			X	
SEN Section Chief														X	
SEN Team Chief														X	
SEN C2 Node	X	X							X		X	X		X	
SEN Maint Team							X[s]			X				X	
Sentinel Radar											X	X		X	
HHB CDR											X				
HHB Motor Maint										X					
HHB Wrecker							X[s]			X					
BTRY CDR								X				X	X		
BTRY CP							X	X			X	X			
BTRY Ammo Vehicle							X[s]			X			X	X	
BTRY Maint PLDR										X			X	X	X
BTRY Motor Maint							X			X			X		
BTRY Wrecker							X[s]			X			X		
BTRY M88							X[s]			X			X		
BTRY System Maint							X								
WPN PLDR							X					X	X	X	
WPN PSG							X						X	X	
XXI LB PLT ADLNCO							X[s]	X				X		X	
WPN SEC CH												X		X	X
WPN FU							X[s]	X				X		X	X

X2: XXI Data Stub-Net, OPFA has FBCB2 but must connect to data network via a SINC-EPLRS surrogate.

ABMOC	air battle Mgmt ops center	AD	air defense
ADCOORD	air defense coordinator	ADLOG	air defense logistics
BN	battalion	BTRY	battery
CDR	commander	CH	chief
CHAP	chaplain	CMD	command
CP	command post	CSM	command sergeant major
DMAIN	division main cp	DTAC	division tactical cp
EPLRS	enhanced position location reporting system	FU	fire unit
		HICON	higher command
HHB	headquarters & headquarters battery	JICO	joint interface control officer
JDN	joint data net	PLDR	platoon leader
MSC	major subordinate command	PSG	platoon sergeant
PLT	platoon	SEC	section
Retrans	retransmission	SPT'D MVR	support maneuver
SEN	sentinel	TECH	technician
SYS	system	WPN	weapon
UMT	unit ministry team		

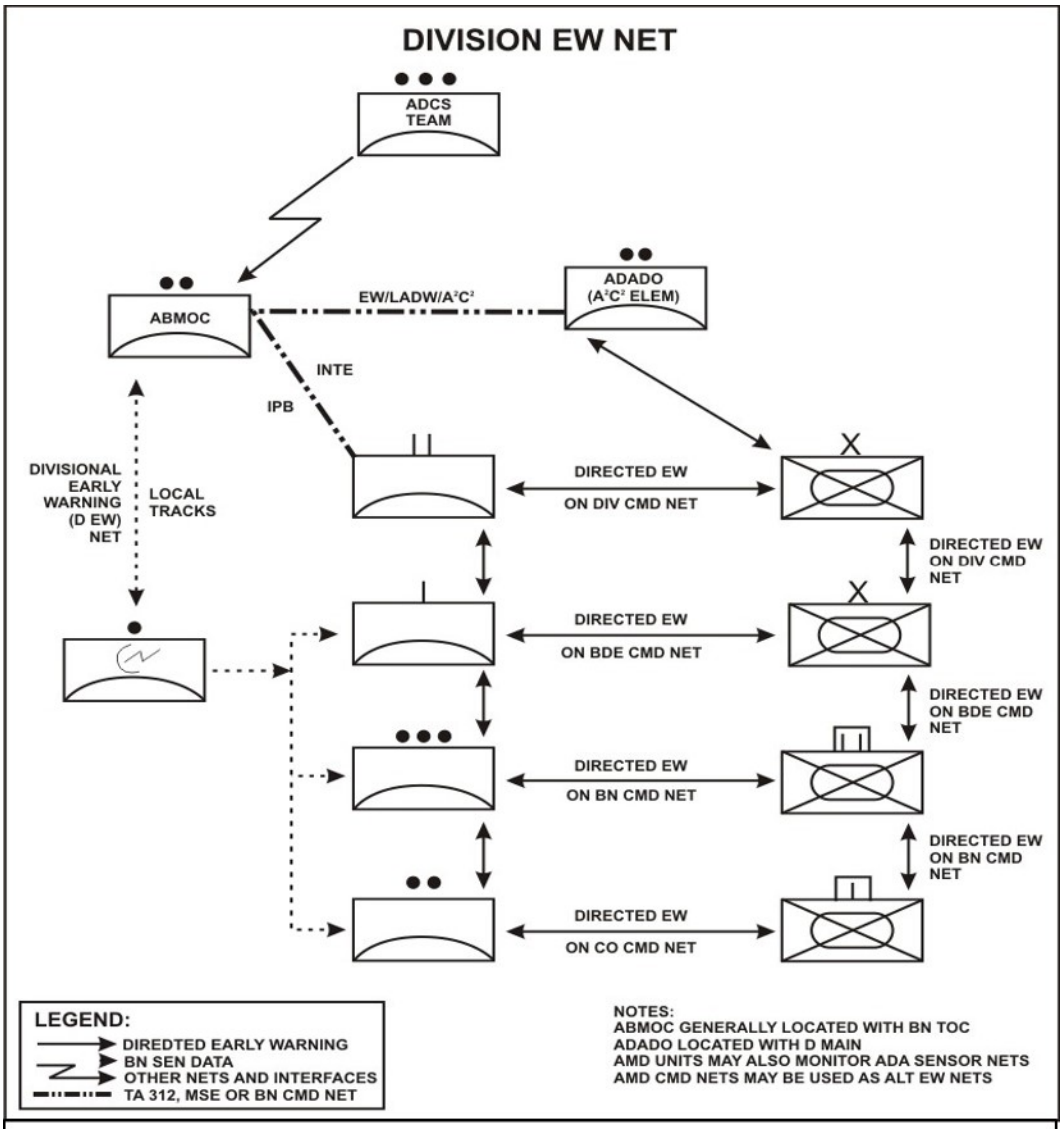
Note: A mix of Joint Tactical Information Distribution System -MIDS, EPLRS, and SINCGARS radios supports the air defense net. The capabilities of the Intra-AMD net will be dependent on the software version and communications equipment fielded. The AMD broadcast net is used by each sensor or network operations to disseminate correlated local and external tracks to the battery CP, platoon headquarters, squad, section, and team in that sensor or network operation's area of interest.

2-53. To obtain the maximum operating efficiency of an antenna site, the antenna should not be located in or near obstacles such as the following:

- Tunnels, overpasses, or steel bridges because they can block or reflect signals.
- Trees with heavy foliage and dense underbrush that may absorb signals.
- Wire-line poles and high-tension power lines, which not only constitute a safety hazard, but also introduce interference and absorb part of the radio signals.

EARLY WARNING (EW)

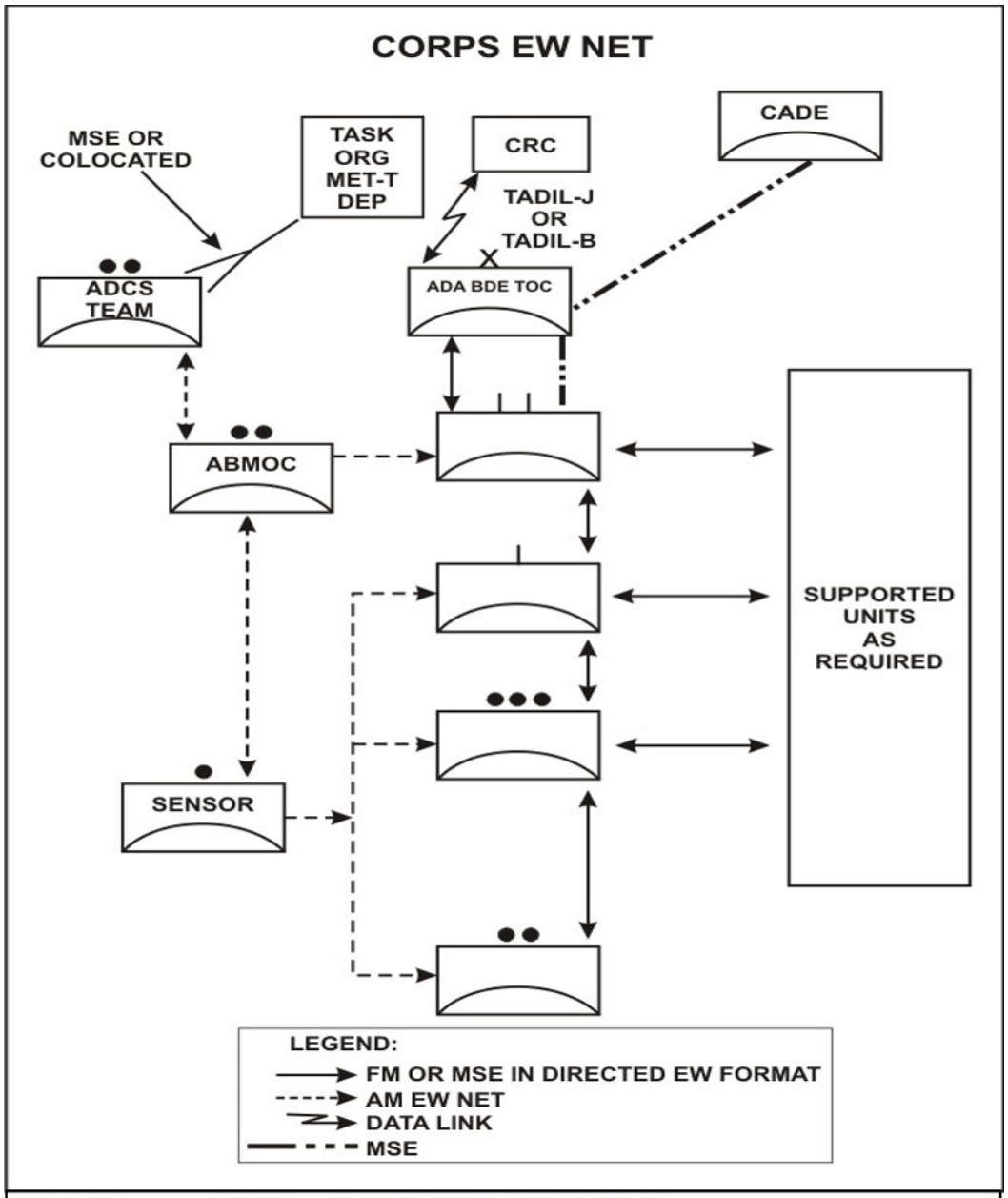
2-54. Early warning at the battalion level is directive in nature. Early warning transmitted on command nets is in a language that all Soldiers can understand, such as local air defense warnings (LADW). The division early warning net also uses the directed early warning format to send early warning to batteries, Air Defense Control System teams, and FUs. The battalion S-2 integrates the air defense sensor plan into the overall information collection plan, which generates long-range early warning, and the ABMOC section funnels or filters redirected early warning to the Corps or division level. The Corps battalions' early warning is passed over the Corps early warning AM radio net. The ADA TOC section receives early warning from Airborne Warning and Control System or other airborne platforms; a Patriot unit; a host nation source; or from an Air Defense Control System team at an adjacent air defense unit. The ADA TOC passes the EW information to its ADA battalion's ABMOC section. The battalion ABMOC integrates this information with information received from its organic assets and passes it as early warning information over the AM net to their air defense batteries. The air defense batteries pass early warning to platoons over the frequency modulation net. Platoons then plot the information and pass it over a frequency modulation net to the squad, section, and team (see figure 2-4, page 2-21 and figure 2-5, page 2-23).



ABMOC	air battle management operations center
ADADO	assistant division air defense officer
ADCS	Air Defense Control System
ALT	alternate
AMD	air and missile defense
BN	battalion
CADE	corps air defense element
CO	company
CMD	command
CRC	command report center
DIV	division
EW	early warning
LADW	local air defense warning
MSE	mobile subscriber element
TOC	tactical operations center

Figure 2-4. Division EW network

2-55. Avenger units equipped with either FAAD or Forward Area Controller Terminal will receive the air picture and EW via these digital devices. This assumes that the analog unit is within radio range of the CPs broadcasting the EW. Digitally equipped units are best equipped to broadcast EW since they are receiving an air picture from their own internal or external sources (for example, Sentinel Patriot, Airborne Warning and Control System). In order for an analog unit to generate its own EW, it must send scouts forward to visually identify enemy aircraft and pass EW via voice radio. This is an antiquated method and involves high risk to the scouts.



ABMOC	air battle management operations center
ADCS	Air Defense Control System
AM	amplitude modulated
BDE	brigade
CADE	corps air defense element
CRC	command report center
EW	early warning
FM	frequency modulation
MSE	mobile subscriber element
TADIL B/ or J	tactical automated data information link (b or j)
TOC	tactical operations center

Figure 2-5. Corps EW net

2-56. The sensors are the Avenger battalion's organic resource for locating enemy airborne platforms. ADA sensors may not be able to cover all NAIs at all times; therefore, help may be needed from division. As information is gathered and analyzed, the S-2 may incorporate some of the force's NAIs to help ascertain probable enemy actions. The ADA sensor platoon leader may be positioned at the battalion TOC, once the sensors are employed, to monitor reported airborne platform information on the EW net. As the ABMOC receives EW from higher sources, the S-3 may direct sensors to cover and report on specific NAIs, even if only to alert units of airborne platforms in the area.

AIR BATTLE MANAGEMENT

2-57. Air battle management is essential in an air environment that has large quantities of both threat and friendly airborne platforms. Current weapon systems, although highly sophisticated, do not possess infallible identification technology. Therefore, the goal of air battle management is to control the engagement of air targets, ensuring the destruction of enemy airborne platforms while preventing fratricide. Precise coordination is necessary to prevent interference among ground-based offensive counterair and active defensive counterair systems, Army aviation, and tactical air forces. As a participant in air battle management, the S-3 or G-3 at each level of command ensures close coordination among all airspace users. Management of the air battle employs a mix of positive and procedural control.

PROCEDURAL CONTROL

2-58. Procedural control is defined as a method of airspace control that relies on a combination of previously agreed upon and promulgated orders and procedures. Procedural control overcomes positive control and identification shortcomings. Procedural control relies upon techniques such as segmenting airspace by volume and time and using weapon control statuses. Procedural techniques are usually more restrictive than positive techniques but are less vulnerable to degradation from electronic or physical attack. Procedural control enhances the continuity of operations under the adverse conditions expected in the AO. (For example, it provides an immediate backup system should degradation of positive control occur in the air battle.) Additionally, procedural techniques provide a management means for ADA systems that do not have real-time data transmission capabilities.

AVENGER CONTROL PROCEDURES

2-59. Control procedures help the integration of air defense in both the commander's concepts of operation and the battle for air superiority. The Area Air Defense Commander or delegated representative establishes air defense control procedures. Air defense commanders use these procedures to control the air defense weapons fires. Air defense warnings (ADW) alert units of enemy air attack; various levels of units broadcast an ADW on the battalion FAAD C3I network. (The standard ADWs, established by Corps or the regional ADA commander, are shown in Table 2-6 on page 2-25.)

Table 2-6. Air defense warnings

ADA RED- Attack by hostile aircraft and/or missile is imminent or in progress. This means that hostile aircraft and/or missiles are within a respective AO or are in the immediate vicinity of a respective AO with high probability of entry thereto. **ADA YELLOW-** Attack by hostile aircraft and/or missiles are probable . This means that hostile aircraft and/or missiles are advancing toward a respective AO, or unknown aircraft and/or missiles are suspected to be hostile and are advancing towards, or are within, a respective AO. **ADA WHITE-** Attack by hostile aircraft and/ or missile are improbable. ADW WHITE can be declared either before or after ADW YELLOW or ADW RED.
ADW air defense warning AO area of operations

2-60. When received, ADWs apply to the force as a whole and must be disseminated to every TOC and CP within the supported force. At the division level and below, EW is disseminated over redundant nets along with a LADW. LADWs are designated as DYNAMITE, LOOKOUT, and SNOWMAN. LADWs are used to alert the force to impending attack at the local level. They should be incorporated into the local tactical standarding operating procedure (TSOP), explaining what response the supported force desires when a LADW is broadcast. For example, in the TSOP when Dynamite precedes an EW message, the forces stop to increase passive air defense measures; and pre-designated elements prepare to engage with a combined arms response. The response desired by the supported force is unique to the mission, dependent on METT-TC, and should be included in the supported force's TSOP. LADW dissemination must be rehearsed with the supported force.

2-61. Readiness conditions describe the degree of readiness of FUs. The decision to select a readiness condition is based on intelligence, EW, and ADW. Normally the air defense battalion or battery commander will designate the readiness condition use by subordinate platoons and FUs. Additionally, readiness conditions are used to ready the force in a logical way for action against the enemy while retaining the ability to stand down units for rest or maintenance. This is critical with 2-man crews and 24-hour capable systems. Table 2-7 on page 2-26 provides an example based on readiness conditions.

Table 2-7. Readiness conditions

REDCON 1- A FU is capable of completing its target engagement drill within the drill standard.
REDCON 2- A FU is capable of beginning its target engagement drill within 5 minutes.
REDCON 3- A FU is capable of beginning its target engagement drill within 30 minutes.
REDCON 4- A FU is moving or released from its mission.
REDCON 5- A FU is NMC
RECON Levels associated with WCS:
RED- REDCON 1 and 2
YELLOW- REDCON 1 and 2
WHITE- REDOCN 1, 2 and 3

FU	fire unit
LADW	local air defense warning
NMC	non-mission capable
REDCON	readiness condition

RULES OF ENGAGEMENT

2-62. Rules of Engagement (ROE) are directives issued by competent military authority that delineate the circumstances and limitations under which the U.S. forces will initiate and continue combat engagement with other forces encountered. Also called ROE:

- Establish varying degrees of control over ADA fires.
- Provide protection of friendly airborne platform.
- Maintain the level of defense required by the tactical situation.

2-63. ROE permit the area air defense commander to retain control of the air battle by prescribing the exact conditions under which engagements may take place. ROEs, which pertain to air defense, apply to all combat participants in the Joint operations area and are disseminated to all echelons. There are 3 basic ROEs that are applicable to all ADA contributors:

- Right of Self-Defense: The right of commanders to protect their own forces. When applied to air defense, the right of self-defense includes the defense of the defended assets.
- Hostile Criteria: Basic rules that assist in the identification of a friendly or hostile airborne platform and considers factors of speed, altitude, heading, and hostile acts. Dropping of flares does not constitute a hostile act.
- Weapons Control Status (WCS): The degree of control over air defense fires. WCS applies to weapon systems, volumes of airspace, or types of platforms. The degree or extent of control varies depending on the tactical situation.

2-64. If, at the time communications are lost and the WCS is one of the following, the unit will follow the below listed procedures:

- WEAPONS TIGHT: Fire only at aircraft positively identified as hostile according to prevailing hostile criteria. Unit remains in WEAPONS TIGHT condition.

- WEAPONS HOLD: Do not fire except in self-defense or in response to a formal order. This is the most restrictive status. If a time limit is placed on the WEAPONS HOLD restriction, the FU maintains WEAPONS HOLD for this time limit only, and then reverts to WEAPONS TIGHT after the time limit has passed. If no time limit was established, the FU maintains WEAPON HOLD for 30 minutes and then reverts to WEAPONS TIGHT.
- WEAPONS FREE: Fire at any aircraft not positively identified as friendly. If a time limit is established, the same rule applies as in WEAPONS HOLD. If no time limit is established, the FU will immediately revert to WEAPONS TIGHT.

2-65. It will be noted that autonomous operations are implemented when communications with the higher controlling headquarters are interrupted for any reason. The FU must take immediate action to reestablish communications. Specific actions taken will be listed in the unit TSOP or the OPORD for the operation. Additional actions to be taken may be similar to the following.

COORDINATION AND CONTROL MEASURES

2-66. Coordination and control measures are procedural measures that delineate or modify hostile criteria, delegate's identification authority, or serve strictly as aids in fire distribution or airspace control. The air defense commander must understand these measures to maximize vertical integration with air defense FUs and Army aviation or air force units. The most commonly used coordination and control measures in the Corps or division area are high-density airspace control zones.

2-67. Base defense zones and weapons free zones (WFZ) are zones that weapons are especially effective when employed as an air defense zone established around an air base and limited to the engagement envelope of short-range air defense systems. The templated enemy air assault-landing zone allows the air defense battalion to engage airborne platforms not positively identified as friendly flying into the WFZ during the specified time. The WFZ must be coordinated closely with the airspace control element at division and the airspace control elements of brigades that are affected. A WFZ and a base defense zone are defined by characteristics such as those being used by the North Atlantic Treaty Organization. WFZs are approved by the Area Air Defense Commander for fixed-wing aircraft, and approved by division or Corps for rotary-wing depending on which aircraft headquarters controls all rotary-wing aircraft in the contingency AO and North Atlantic Treaty Organization, which requires approval from the airspace control authority (ACA).

2-68. The Corps or division commander may establish a high-density airspace control zone. A high-density airspace control zone may also be established when the Corps or division commander wants to execute a Joint air attack mission. The establishment of a division high-density airspace control zone may affect the Corps commander’s deep operation plan and must be approved by the Corps commander. In the early phases of a contingency operation, the brigade commander may establish a high-density airspace control zone after receiving approval from the Joint task force command. A high-density airspace control zone is defined by characteristics of ACA approval and the volume of airspace. Additionally, the maneuver commander normally controls all airspace users within the high-density airspace control zone. The commander who controls the air defense WCS may utilize a variety of weapons including air defense weapons, and he must receive an approval before the airborne platform can transit.

2-69. A coordination altitude is an airspace coordinating measure that uses altitude to separate users as the transition between different airspace coordinating entities. Coordination levels are determined by the Joint operations area’s ACA, extends (normally) from the Corps boundary to the FLOT, may extend forward of the FLOT or to the edge of the Corps AO, and does not apply to air defense and field artillery weapons.

2-70. Coordination level (CL) is an ACM used to separate fixed-wing and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly.

2-71. A restricted operations area and airspace-restricted areas are synonymous. A restricted operations area is airspace of defined dimensions, designated by the airspace control authority, in response to specific operational situations or requirements within which the operation of 1 or more airspace users is restricted.

2-72. A minimum-risk route is a temporary route of flight recommended for USAF use that presents the minimum known hazards to low-flying platforms transiting in or near the combat zone. A low-level transit route is similar to a minimum risk route. This temporary corridor of defined dimensions allows the low-level passage of friendly airborne platforms through friendly air defenses and controlled or restricted airspace. The routing accommodates transiting airborne platforms while avoiding critical areas and assets defended by ADA and areas of anticipated intense combat operations. The below listed characteristics define a low-level transit route:

- Recommended by Corps.
- Approved by the air component commander.
- Dimensions may vary.
- Should be changed frequently.
- May extend below the coordinating altitude.
- Represents minimum hazard to friendly aircraft.
- Incorporates consideration of the ground tactical plan.
- Avoids areas of high airspace use.

2-73. The Standard Army Aircraft Flight Route (SAAFR) is established below the coordinating level to facilitate the movement of Army aviation assets and is defined by the below listed characteristics:

- Located in Corps through brigade contiguous and noncontiguous areas of operation.
- Developed by airspace control element and does not require Joint approval.
- Developed by Corps from the Corps Standard Army Aircraft Flight Route structure.
- Must consider terrain flight capabilities.
- Must consider the locations of the low-level transit routes.

2-74. An air corridor is a restricted air route of travel specified by friendly aircraft and established for the purpose of preventing friendly aircraft from being fired on by friendly forces. Air corridors are standard Army operational procedures and are defined by the following characteristics:

- No requirement for ACA approval.
- Temporary in nature, established as required.
- Employed as control measures during air assault operations.
- Coordinated with the airspace control element.

2-75. The below listed additional measures are examples of measures routinely used to assist in controlling and resolving conflicts of airspace users:

- Airspace coordination area. An airspace coordination area defines a block of airspace in the target area in which friendly airborne platforms are reasonably safe from friendly surface fires. Informal airspace coordination areas are most often used and are the preferred method; however, occasionally brigade or higher headquarters establishes a formal airspace coordination area. An informal airspace coordination area can be established at task force or higher level and is usually in effect for a very short period of time, long enough (3 to 6 minutes) to get the mission into and out of the target area.
- Fire support (FS) coordination lines, weapons engagement zones, air control point, communications checkpoint, initial point, and waypoint.

FIRE CONTROL ORDERS

2-76. Fire control orders are commands that are used to control air defense engagements on an individual basis, regardless of the prevailing WCS. The FU leader, for fire control purposes or for ensuring safety, normally issues orders. The following are fire control orders:

- CEASE FIRE - Gunner does not fire - continues to track.
- HOLD FIRE - Cease all tactical action, to include tracking. (Resume search of assigned AO.)
- ENGAGE - Gunner fires.
- CEASE ENGAGEMENT - Gunner does not fire. Ceases tracking. Used to change an ongoing engagement from 1 target to another of higher priority.

CONTROL MEASURES

2-77. Fire units are normally assigned a primary target line (PTL) and a sector of fire. These are assigned to ensure that all airborne platforms attacking the defended asset are engaged. These measures are established to assist in the distribution of fires when defending against multiple targets that are attacking from different directions. Normally each FU concentrates its fires on the most threatening platform closest to its PTL or within its assigned AO. A PTL is an azimuth along which gunners will focus their primary attention (see figure 2-6).

2-78. A sector of fire (see figure 2-6) is defined by azimuth boundaries. This is normally specified by a left and right limit. The squad or team will focus its primary attention, both searching and firing, within this designated AO.

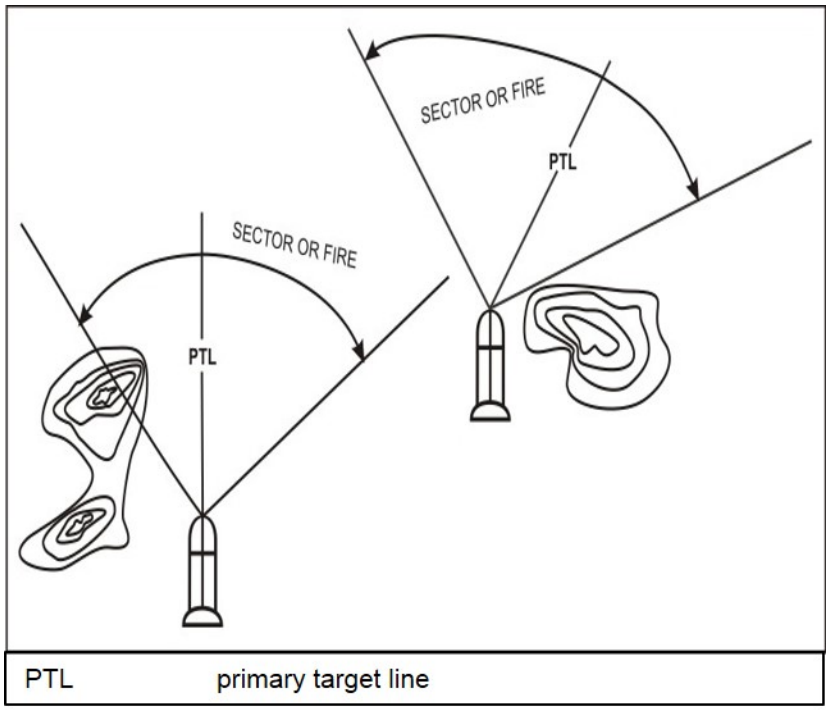


Figure 2-6. Sector of fire and PTL (primary target line)

SELECTION CRITERIA

2-79. The assignment of a sector of fire and PTL does not restrict the squad or team to look only in that AO. Rather, it means that, given 2 targets that are equal threats, the gunner will fire on the target within the sector of fire closest to the PTL. If there are no targets within a gunner's AO, they will engage targets outside of the AO that pose the greatest threat to the defended asset. Battery commanders must ensure that platoon leaders assign a PTL and sector of fire during the planning of the operation.

SURVEILLANCE

2-80. Surveillance is either active or passive, and employs techniques proven over time to be effective in gathering information concerning overt and covert operations. Surveillance sensors for ADA units provide information on activities taking place. The information gathered is used to aid in planning, target designation, alerting, and cueing.

2-81. Sensors are typically optical, infrared, laser, acoustical, Olfactory (chemical detection), or auditory, and provide the following:

- EW.
- Detection.

- Cue system.
- Acquisition.
- Identification (tentative).
- Track target.
- Surveillance.
- Day or night operation, in all weather, and in battlefield environments of dust and obscurant.
- Serves as a communications relay for the intra-FAAD network.
- Automated target acquisition and air track identification to include IFF.
- 360-degree azimuth coverage for target acquisition and tracking of both fixed wing and rotary wing airborne platforms in clutter and electronic countermeasure environments, as well as, range and elevation.
- Transportable on a high mobility multipurpose wheeled vehicle (HMMWV) (M1097) with a trailer.
- Emplaced or march ordered by 2 Soldiers and operated by 1 Soldier.

2-82. The Sentinel platoon is assigned to the headquarters and headquarters battery of the Avenger battalion. The platoon will have six Sentinel radars for deployment and consists of a platoon headquarters, a maintenance section. Target information is obtained by sensor surveillance and locating devices, and by personnel. The effectiveness of countering an attack may depend on the accuracy and timeliness of this information.

SENSOR DEPLOYMENT TECHNIQUES

2-83. Sensors normally deployed under battalion control to provide coordinated area coverage in accordance with the battalion R&S plan. However, sensors may be attached or placed under the operational control of a firing battery to better support the scheme of maneuver. When employed in this manner, at least 2 sensors should be allocated to a battery. This will afford it a continuous coverage capability in meeting deployment requirements. A sensor can remain in position while the other displaces. The ADA battalion commander must consider certain deployment factors to determine which method to use. These factors include, but are not limited to, the following:

- Enemy AAA.
- Deployment of supported forces.
- Deployment of FUs.
- The enemy threat, both air and ground.
- Terrain level, hills, valleys, water.
- Electronic warfare environment.

2-84. The three possible methods of employment are as follows:

- Method A. The sensor platoon leader deploys the sensor teams with staff supervision exercised by the ADA battalion S-3 and the S-2 per the IPB. In this method, the platoon leader retains control of the teams.
- Method B. Two sensor teams are attached to each firing battery. The firing battery selects positions and notifies the S-3 of the battery sensor plan. The S-3 uses this information to synchronize the battalion's coverage plan. The S-3 coordinates these positions with the ADA battalion S-2. The S-3 recommends changes to the firing battery commander, if necessary.
- Method C. 2 sensor teams could be attached to a firing battery, as in Method B. The rest of the sensor teams remain under the sensor platoon leader, as in Method A. Other variations are also possible.

2-85. The 6 Sensors organic to the Avenger battalion should be employed Sentinel radars IAW the tactical situation and METT-T, mutual support distance should generally be 25-30 km, overlapping radar coverage is generally 40-60 km.

2-86. Controlling authority may be used to enhance survivability of the sensors particularly those deployed well forward. The 6 sensors are enough to provide coverage to an entire division area. The ADA

battalion S-2 must carefully integrate the sensors into the division R&S plan according to the aerial portion of the IPB. He should concentrate on covering critical NAIs, Target Areas of Interests, and any AAAs. This will ensure mutual support and overlapping coverage and will minimize no observation zones (dead spaces) caused by terrain masking.

2-87. Sensors are displaced to provide continual coverage of tactical operations. They also displace for survivability as determined by the section chief and the situation. The sensors will transmit in accordance with the R&S plan. Blinking is not necessary unless the sensors are operating in the same position for over 30 minutes.

2-88. The selection for sensor position is critical to the timely transferring of EW information to FUs. Equally important is EW coverage of the defended area. Final selection of positions for each sensor must be coordinated with the battalion S-3. The sensor position must provide coverage throughout the area in which the weapons are employed and proceed as follows:

- Pass alert data to the TOC in time to ensure effective reaction by FUs to the air threat. To meet this requirement, radar coverage should extend beyond the unit positions at least 10 kilometers in the expected direction of air attack.
- Provide continuous alert warning if a system goes out or must be moved to better support operations.
- Mutual support distance should generally be 25 to 30 kilometers; overlapping radar coverage is generally 40 to 60 km.
- Provide security from small arms and automatic weapons fire. When possible, the most forward radar should be employed in a secure area no closer than 2 kilometers to the FEBA or line of contact.

RECONNAISSANCE

2-89. Reconnaissance is conducted to select the best battalion and battery positions, march routes, start points and release points (RP), CPs, observation posts, and communications sites. This includes a thorough analysis of the terrain where the battle may be fought. Reconnaissance helps the unit move from a location to another as quickly and as organized as possible. At times, the reconnaissance effort may be part of a larger reconnaissance effort and will need to be coordinated.

2-90. During the reconnaissance, the party makes decisions based on the following considerations:

- Communications sites.
- Position entrances and exits.
- Concealment or defilade.
- Trafficability.
- Radar positions.
- Observation posts.
- All-around security.
- Routes of March and rest or refuel sites.
- Start Points and RPs.
- Time of movement.
- Use of route markers or traffic control points.
- Order of March or displacement.
- Enemy and friendly situations.
- Bridge capacity.

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Chapter 3

Unified Land Operations

This chapter discusses some of the considerations for the Avenger battalion and battery in unified land operations. Unified land operations are complex and have no clear delineation between stages. This chapter will briefly discuss the goal of unified land operations and how the role of the Avenger system plays in unified land operations. More detailed description of the role of Avenger in offensive and defensive operation can be found in Chapter 3.

AVENGER IN SUPPORT OF UNIFIED LAND OPERATIONS

3-1. Unified land operations describes how the 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.

SUPPORT OF OFFENSIVE TASKS

3-2. In the offense, Avengers use their mobile capabilities to provide AMD coverage to maneuvering assets and support the scheme of maneuver. The Avenger system's mobility and shoot-on-the-move capability provide the force with a static and mobile defense protection positioned along expected enemy avenues of approach.

3-3. In the execution of offensive tasks, the Avenger weapons system provide AMD coverage to protect the force from enemy air surveillance, air attacks and to defend the friendly formations as they maneuver during movement to contact, attack, exploitation and pursuit tasks.

MOVEMENT TO CONTACT

3-4. Movement to contact is an offensive task designed to develop the situation and establish or regain contact. The Avenger weapons system can be employed to protect such critical assets as mission command nodes, reserve forces, artillery units, and logistical nodes and to provide coverage for choke points along the route of march. Additionally, the Avenger may be positioned on the maneuver force's flank and rear where it is best suited to counter enemy air avenues of approach. Avenger systems should not be integrated into the maneuver force when contact is expected because it is a lightweight vehicle and is extremely vulnerable to direct fire, small arms, and indirect fire (ADRP 3-09).

ATTACK

3-5. Attack is an offensive task that destroys or defeats enemy forces, seizes and secures terrain, or both. In the course of the attack, the Avengers weapons system can be positioned to support the supported commander's scheme of maneuver, protect logistics, mission command nodes, and FS assets. When supporting the attack Avenger units must retain flexibility to shift and redirect fires to provide the best coverage (ADRP 3-09).

EXPLOITATION

3-6. Exploitation is an offensive task that usually follows a successful attack and is designed to disorganize the enemy in depth. ADA resources supporting an exploitation task must be as mobile and survivable as the maneuver force. Because of its lightweight nature and extreme vulnerability to direct fire, small arms, and indirect fire, the Avenger is best suited to protect lines of communications (LOC), key logistics facilities and mission command nodes (ADRP 3-09).

PURSUIT

3-7. Pursuit is an offensive task designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it. Avenger can be positioned to protect the maneuver force's flank and rear where it is best suited to counter enemy air avenues of approach and protect mission command nodes, logistics facilities and reserve forces (ADRP 3-09).

SUPPORT OF DEFENSIVE TASKS

3-8. In the defense, Avengers are typically employed in static positions to defend against unmanned aircraft systems (UAS), fixed-wing and rotary-wing threats. Their coverage methods are mission dependent and when possible Avengers will have overlapping coverage. In the defense, the supported commanders will prioritize requirements for air defense coverage based on mission analysis, IPB, and METT-TC, generating a defended asset list. The commanders defended asset list may vary based on the mission requirements, for example: a commander may designate battle positions in the main engagement area, mission command nodes, reserve forces or logistics assets as air defense priorities in area defense and may shift his air defense priorities to designate key routes and LOCs during retrograde operations.

3-9. The Avenger weapon systems versatility and maneuverability make it the ideal air defense system to support area defense, retrograde, and security operations.

AREA DEFENSE OPERATIONS

3-10. Area defense is a defensive task that concentrates on denying enemy forces access to designated terrain for a specific time rather than destroying the enemy outright (ADRP 3-90). In an area defense, the Avenger system may be positioned along the most dangerous enemy air avenue of approach to provide counter-air surveillance coverage, and protect logistics points, mission command nodes, and friendly forces from air attacks.

RETROGRADE OPERATIONS

3-11. A retrograde operation is a defensive task that involves organized movement away from the enemy (ADRP 3-90). In retrograde operations, commanders may position Avenger fire units along retrograde routes and LOCs to protect maneuver forces from air attacks or prevent enemy air from disrupting friendly force movements.

SECURITY OPERATIONS

3-12. Security operations are those operations undertaken by a commander to provide early and accurate warning of enemy operations, to provide the force being protected with time and maneuver space within which to react to the enemy, and to develop the situation to allow the commander to effectively use the protected force. The ultimate goal of security operations is to protect the force from surprise and reduce the unknowns in any situation (ADRP 3-90).

3-13. Security operations encompass 5 tasks: screen, guard, cover, area security, and local security. The Avenger weapons system is suitable for supporting screen, area security and local security operations. In supporting these operations, Avenger should be positioned with the security forces or along enemy air avenues of approach that allow surveillance of defensive positions and preparations. Due to its low survivability in a direct fire fight, Avenger teams should position within the defensive perimeter oriented in the direction of the enemy's most likely air avenues of approach to protect assembled forces from enemy fixed and rotary-wing attacks and UAS observation.

PRE-DEPLOYMENT ACTIVITY

3-14. The planning process begins after alert. Assessing the following elements is essential to the ADA battalion-level pre-deployment planning:

- Operational Area (non-mature or mature).
- Integrating into joint and combined ADA.
- Threat.

- Geographically separated element's integration into the force.
- Force composition and size.
- Means of entry and withdrawal.
- Coordination of objective and execution.
- Purpose.
- Duration.

3-15. Both prior to deployment and during the operation; decision-making, planning, and analysis of the conduct of the operation must be continuous. The ADA battalion S-2 conducts a pre-deployment IPB based on the ADA brigade or geographical combatant commander's assistant chief of staff, intelligence IPB with special interest to the operational environment. The battalion will devise an air defense plan based on an evaluation of METT-TC and higher echelon planning guidance or directives. Based on lift assets, the plan, and the threat, the commander must develop a time-phased deployment plan that establishes defensive coverage of the operational area. Pre-deployment activities could change as a result of changes to the political environment of the U.S. or host nation. Because ADA systems may be deployed early in force projection operations, units must ensure that their deployment, emergency deployment, and readiness exercise standard operating procedure (SOP) address the 5 phases of mobilization. The battalion staff uses reverse planning to determine the package sequence to support the tactical operation. The sequencing of the force should support rapid expansion of ADA systems so that the air defense protection coverage increases as weapon systems are introduced into the operational area.

EMPLOYMENT

3-16. Avenger units are employed to provide air defense protection for the Joint Force Commander (JFC). Employment encompasses a wide array of operations, including but not limited to, entry operations (opposed or unopposed), shaping operations (lethal and non-lethal), decisive operations (combat or support), and post-conflict operations (prepare for follow-on mission or redeployment).

3-17. Unified land operations require mentally agile leaders able to operate across a range of military operations. Mission command focuses on commanders rather than staffs. Commanders, not staffs, drive effective decision-making. Commanders must be able to mass fires at decisive points and times and effects over time. Decentralized rather than centralized operations are the norm today and will likely remain so. All leaders, from the highest to the lowest levels, must understand both the art and the science of operations and command.

SHAPING OPERATIONS

3-18. Operations involving combat, at some point in time, will require the JFC to decide when to move against the enemy. This point in time may be predetermined and stated in the campaign plan, or it may be tied to specific enemy actions. In either case, the commander should base it on sufficient information and a clear picture of the enemy.

DECISIVE OPERATIONS

3-19. The ADA brigade commander plans for the defense of heavy forces with Patriot assets and Avenger protection for base and sustainment facilities as the lodgment grows. As the operational area expands, additional AMD capabilities will be deployed to relieve or enhance infantry and special ADA systems at critical points. Infantry and special ADA units will then have the responsibility for providing air defense protection of its assembly areas, but their defense must be overmatched by Joint operations area AMD capabilities. As the Corps expands the entry and begins combat operations against the enemy, the ADA unit must orchestrate the continued airborne platform defense within the AO while pushing Patriot or other ADA systems such as Terminal High Altitude Air Defense, forward to overmatch operational or units in the combat zone. This may require the deployment of additional AMD capabilities into the Joint operations area to meet all the requirements. Avenger units may be required to move with their supported elements and provide air defense coverage for its assigned mission. As armored forces are introduced into the AO, they will deploy with their organic Avenger elements as required.

PLANNING REDEPLOYMENT

3-20. In addition to supporting the execution of the 4 redeployment phases, generating force organizations play a major role in planning redeployment. They do this in conjunction with the redeploying units, the deployed Army Forces headquarters, and transportation command. These generating force organizations include the following:

- Redeployment preparation.
- Movement to and activities at the port of embarkation.
- Movements to ports of debarkation.
- Movement to home or demobilization stations.

SHAPE PHASE

3-21. During the shape phase, Joint forces continuously execute security cooperation and peacetime military engagement to establish conditions favorable to the conduct of future Joint and major operations. Such operations deter or dissuade potential adversaries and assure or solidify relationships with friends and allies. Considerations during the "shape" phase include the IPB the organization and training of Joint forces, and establishing and maintaining access to the AO. Shaping operations can include the stability operations in support of the aforementioned considerations. Also inherent in the shape phase are measures that enable strategic reach. These include actions that facilitate the projection and employment of U.S. capabilities across strategic distances.

DETER PHASE

3-22. The deter phase prevents undesirable adversary action by demonstrating the capabilities and resolve of the Joint force. JFCs also continue to shape the operational environment to facilitate future operations should deterrence fail. During this phase, JFCs focus intelligence collection efforts on likely adversaries and the operational environment. Also, they establish military and nonmilitary flexible deterrent options.

SEIZE THE INITIATIVE PHASE

3-23. Seizing, retaining, and exploiting the initiative requires commanders to interpret developments and shift the weight of effort throughout their operations to achieve decisive results. As they do this, the forces and priorities they assign to each element of decisive actions change. Throughout an operation, commanders constantly adapt and perform many tasks simultaneously. Commanders change tactics, modify their control methods, change task organization, and adjust the weight placed on each element of decisive actions to keep the force focused on accomplishing the mission. They base these decisions on the situation, available resources, and the force's ability to execute multiple, diverse tasks. Commanders' assessments should consider the progress of ongoing operations, changes in the situation, and how the rules of engagement affect the force's effectiveness in each element. Commanders not only assess how well a current operation is accomplishing the mission, but also how its conduct is shaping the situation for subsequent missions (see FM 6-0) such as the following:

- When an enemy initiates hostilities.
- When the decision is made to commence offensive operations.

DOMINATE PHASE

3-24. The dominate phase focuses on breaking the enemy's will for organized resistance, or, in noncombat situations, establishing control of the operational environment. Joint forces concentrate on direct and indirect attacks on enemy centers of gravity until an adversary's will and capability to resist is negated; as well as establishing control of the operational environment.

STABILIZE PHASE

3-25. Joint operations require a stabilization phase when a legitimate civil government is limited or not functioning, following the successful conclusion of the dominate phase. In such cases, the conduct of the stabilize phase may well determine the outcome of the operation. Key considerations for the JFC during this phase include the Army's five stability tasks:

- Civil security.
- Civil control.
- Restore essential services.
- Support governance.
- Support economic and infrastructure development.

CIVIL AUTHORITIES PHASE

3-26. During this phase, the joint force's goal is to enable the viability of host-nation civil authority and its provision of essential services to the largest number of people in the region. This can be accompanied by a decrease in U.S. force presence (through redeployments) as the host nation assumes a greater role in security, governance, and the provision of public services.

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Chapter 4

Avenger in Offense and Defense

Successful commanders visualize their operational environment and understand the relationship between friendly forces and the enemy in time; space, action and where to apply this decisive effort. This chapter describes how an Avenger battalion and battery operates during offensive and defensive operations.

AVENGER IN THE OFFENSE

4-1. Commanders conduct offensive actions within the area of operations by synchronizing their systems in time, space, resources, purpose and action to conduct simultaneous and sequential decisive, shaping, and sustaining operations in depth.

DECISIVE OPERATIONS IN THE OFFENSE

4-2. Decisive offensive operations are attacks that conclusively determine the outcome of major operations, battles, and engagements. At the battery level, engagements achieve the purpose of the mission of the higher headquarters. Decisive engagements are accomplished through close combat that physically destroys the enemy, defeats the will to resist; or seizes, occupies, and holds terrain. Commanders position their firing systems in a manner that will allow them to mass and shift priority of fires as necessary.

SHAPING OPERATIONS IN THE OFFENSE

4-3. Shaping operations create conditions for the decisive operation. They include attacks in depth to secure advantages for decisive operations and to protect the force. Commanders conduct shaping operations by engaging airborne platforms at maximum range in order to deny the enemy reconnaissance, intelligence, surveillance, and target acquisition (RISTA), and avoid attacks against our friendly forces or assets.

SUSTAINING OPERATIONS IN THE OFFENSE

4-4. In the offense, sustaining operations ensures freedom of action, and maintains momentum. Commanders must maintain versatility and agility to sustain the need to forecast future events that call for decisions throughout the entire operation. Army unit locations need not be contiguous with those of their supported forces. ADA units may be called upon to conduct humanitarian assistance and population control, as well as controlling prisoners and handling refugees. Sustaining operations focus on restoring order, minimizing confusion following the operation, reestablishing host nation infrastructure, preparing forces for redeployment, and continuing a presence to allow other elements of national power to achieve the overall strategic aims. The array of forces is no longer seen in terms of the linear battlefield, but rather in terms of contiguous and noncontiguous areas of operation. As a result, tactical units are often placed far from the original support area; so commanders must provide security to all the appropriate units when operating with extended LOCs.

PLANNING AIR DEFENSE OFFENSIVE OPERATIONS

4-5. ADA units assigned for protection of the force, during an offensive operation, will move so they are in a position to best provide air defense protection. Consideration should be given to weighing the main effort against additional ADA assets. PTLs and sectors of fire should be oriented on low AAAs. The commander's air defense plan must support his scheme. Priorities are established to ensure effective and continuous air defense protection for the entire offensive operation. The commander and the G-3 or

S-3 develop and recommend priorities. In offensive operations, air defense and forward units have a priority to protect the commander's ability to and sustain offensive operations. Relationships between ADA units and other units may be either command or protect and support. They are directed by the G-3 or S-3, in coordination with the commander who retains sufficient control of ADA assets to react to rapid changes in the commander's scheme of intent. Avenger battalions and batteries assigned, attached, or placed in support are the Corps commander's primary tools in the counter-reconnaissance fight. The Corps will frequently use them to reinforce AMD or to achieve early engagement by deploying them into the covering force area. The tactical situation, Corps concept of operation, Corps priorities, and Avenger's limitations will dictate their employment.

EXECUTING OFFENSIVE OPERATIONS

4-6. The division will conduct a number of offensive operations; commanders must create conditions for successful battles and engagements. The commander will normally be involved in the 4 general offensive operations listed below:

- Movement to contact is the offensive task designed to develop the situation and establish or regain contact (ADRP 3-90).
- Attacks are hasty or deliberate. Regardless of the type, the purpose of the attack is to defeat, destroy or neutralize the enemy. The differences between the types of attacks lie in the amount of planning.
- Exploitation is the extension of the destruction of the defending force by maintaining offensive pressure. Exploitation is especially important in a deliberate attack in order to keep the enemy from regaining the initiative.
- Pursuit is an offensive operation against a retreating enemy force. It follows a successful attack, or exploitation, and is ordered when the enemy cannot conduct an organized defense and is attempting to disengage.

4-7. Fundamentally, the employment of ADA brigades and battalions (in terms of force allocation) in support of corps and below is the same for all offensive operations. The primary considerations are reinforcing forward divisions conducting the main effort and the Corps support in any contiguous and noncontiguous area of operations. Possible priorities in the Corps support area(s) include the following:

- Corps Reserve.
- Mission Command Information Systems.
- Corps aviation brigade.
- Logistic nodes.
- Unit routes and choke points.
- Airfields.

4-8. Avenger's high mobility and shoot-on-the-move capability makes it extremely effective for assets that have the potential to move forward rapidly. These assets include reserves, Corps artillery, and aviation support facilities. When positioning ADA units in forward divisions, the battalion commanders must fully understand the Corps ground scheme of maneuver to enhance and assist ADA battalions in destroying threat air platforms as far forward as possible. Primary consideration in developing priorities is given to the force, mission command, forward movement of units, and support assets for aviation. Avengers could be placed with brigades to fortify the Corps' main effort. The following offensive operations maintain the flexibility and initiative that the commander desires.

MOVEMENT TO CONTACT

4-9. The battalion commander, in situations, may weigh the main effort and preserve the force's ability to move to contact. The movement to contact is characterized by rapid aggressive action, which the battalion commander should task organize to maximize flexibility, and plan for decentralized execution. Since the lateral movement may go to the left or right, the battalion commander will have to read the AO, analyze the terrain and aerial threat throughout the entire route of march, and look for key indicators to determine what the enemy is capable of doing. This includes locating by-passed enemy forces and obstacles

that may cause choke points. The battalion S-2 and battery commanders will keep other commanders informed of all intelligence changes. Decision support matrices, synchronization, and execution matrices are tools commanders use to aid their flexibility, as well as reaction time to contingencies. The infantry and special division ADA battalion may weigh the main effort with the man portable configuration and employ Avengers forward when the situation dictates. Depending on the direct fire threat, Avengers may be used to weight the main effort as well.

MEETING ENGAGEMENT

4-10. A meeting engagement is a combat action that occurs when a moving force engages an enemy at an unexpected time and place. The winner of a meeting engagement battle is the force that gains and retains the initiative. Commanders seize and maintain the initiative, by rapidly visualizing the situation and deciding who, when, and where to engage enemy airborne platforms. ADA task organizing commanders must be aware that the force's lead element will quickly bypass or fight through light resistance in order to maintain momentum. This action could place an ADA unit in direct fire of the enemy's ground attack.

ATTACK TECHNIQUES

4-11. An attack is an offensive operation that destroys or defeats the enemy force; seizes or secures terrain; or a combination of both. Attacks are hasty or deliberate, but also include special purpose attacks such as counterattack, spoiling attack, raids, feints, and demonstrations. METT-TC will be the deciding factor, but spoiling attacks, raids, and demonstrations are not usually an AMD priority for asset allocation. The deliberate attack differs from the hasty attack by precise planning based on detailed information, a thorough IPB, and rehearsals.

DELIBERATE ATTACK

4-12. Deliberate attacks normally include large volumes of supporting fires, an identified main and supporting attack, and deception measures. Since more time is taken to plan and prepare for a deliberate attack, the enemy has more time to prepare for a defense. In addition, the enemy has more time to identify targets that may be designated for attack. Regardless of the type of the attack, the purpose of the attack is to defeat, destroy or neutralize the enemy. The AMD plan must include contingencies for continuing the attack, possible enemy counterattacks, and air defense of the brigade forces once the objective(s) is achieved. Commanders must aggressively plan to disrupt and deny the enemy any effort to gather R&S information about friendly forces or its assets. Deliberate attacks use simultaneous operations throughout the enemy depth, planned fires, shaping operations, and forward positioning of resources needed to sustain momentum. Commanders must take the time necessary to position units and develop sufficient intelligence about AAAs to destroy all enemy airborne platforms before they are allowed to engage friendly forces.

HASTY ATTACK

4-13. A hasty attack results from a movement to contact or when a bypass has not been authorized. It is conducted when enemy forces are unprepared or unaware of friendly forces. Hasty attacks are conducted to seize the initiative. The commander must move quickly to gain the advantage. Speed and violence can overcome lack of preparation. Hasty attacks are initiated and controlled with FRAGORDs, SOPs, and battle drills, which are very critical to effective execution of hasty attacks.

4-14. The battalion staff must always be prepared for hasty attacks. They must plan ahead and anticipate. The battalion commander must weigh the main attack with the bulk of air defense firepower. Focus is given to when and where the enemy will commit the majority of their attacking airborne platforms. The battalion commander must see the battlefield through the eyes and ears of the staff, battery commanders, and sensor, or other communication nets. Thus, remain flexible enough to react to changes in the situation quickly and intelligently. Since time is a limited resource, battery commanders must establish priorities of effort early, and rely on an abbreviated coordination process. A hasty attack following a movement to contact relies on pre-designated branches and sequels, SOPs, and battle drills. The Avenger air defense plan must include contingencies for continuing the attack, possible enemy counterattacks, and air defense

of the forces and assets once the objective(s) is achieved. A unique contingency the battalion commander should plan for is denial of enemy air assault landing zones in the division's contiguous and noncontiguous support area(s) once the attack has begun. The commander should also plan a defense in depth to protect sustainment of the battle for the division and ADA units. If necessary, a battalion commander can request assistance from the Corps ADA brigade commander to reinforce the division. This allows for massing of forces at the critical place and time. The initial advantage in hasty attacks belongs to the force that first deploys into combat formation and assaults the enemy. The 3 phases to the hasty attack are advance of reconnaissance and security elements, deployment and assault by security forces, and assault by the main body.

4-15. The forms of maneuver include the following:

- Envelopment: A form of maneuver in which an attacking force seeks to avoid the principal enemy defenses by seizing objectives behind those defenses that allow the targeted enemy forces to be destroyed in their current positions.
- Double envelopment: This results from the simultaneous maneuvering around both flanks of a designated enemy force.
- Penetration: A form of maneuver in which an attacking force seeks to rupture enemy defenses on a narrow front to disrupt the defensive system.
- Turning movement: A form of maneuver in which the attacking force seeks to avoid the enemy's principle defensive positions by seizing objectives behind the enemy's current positions thereby causing the enemy force to move out of their current positions or divert major forces to meet threat.
- Frontal attack: A form of maneuver in which the attacking force seeks to destroy a weaker enemy force or fix a larger enemy force in place over a broad front.

4-16. When the hasty attack is not succeeding, the commander may elect to establish a hasty defense on key terrain until a greater number of and artillery units can be brought to bear on the enemy. Because preparation time is short, planning time is nonexistent; orders of necessity are brief during the hasty attack. It is imperative that commanders locate themselves where they can impact the situation as it develops.

4-17. The Avenger platoon is best suited to provide air defense coverage in support of contiguous and noncontiguous support AO. As the attack continues, commanders will push support packages forward. Avengers can provide not only counter-RISTA but also threat denial from close air threat forces.

4-18. The Avenger battery or platoon is best suited to provide air defense coverage along logistics routes. These types of FUs can also be used to augment forces along key points such as choke points or key terrain that is not accessible by the Avenger squads.

4-19. Brigade contingency planning and SOP reactions to contact simplify the execution of a hasty attack. The brigade commander's trailing or adjacent units can act against enemy flanks by attacking with fire and interdict enemy units attempting to do the same. The scouts and security force provide initial information on the enemy force and develop the situation. The lead unit defends from hasty positions to fix the enemy element. The trailing units counterattack the enemy flank while supported by field artillery, the anti-armor company, and close combat attack.

4-20. Attack helicopters will be used as a mobile anti-tank reserve. Aerial surveillance assets will attempt to locate follow-on forces, the main objective being the follow-on forces supporting the main effort.

4-21. In a deliberate attack, air defense planning should be extensive and well-coordinated. All aspects of the operation are well rehearsed to include operations in a degraded mode. This includes a complete IPB process that addresses the following elements:

- Offensive and defensive counter air operations.
- Attack profiles.
- Enemy aviation fire sacks.
- Decision support template, DSM, and synchronization matrix.

SPECIAL PURPOSE ATTACKS

4-22. Counterattack, raid, ambush, feint, demonstration, and spoiling attacks are forms of attack that employ distinctive methods and require special planning. These attacks are described in the following paragraphs.

Counterattack

4-23. Counterattack is a form of attack by part or all of a defending force against an enemy attacking force. The general objective is denying the enemy their goal of RISTA or attacking.

Raid

4-24. A raid is usually a small-scale offensive tactical operation. It is based on detailed intelligence, involves swift movement into hostile territory, and ends with a planned withdrawal. The raid operation is appropriate to the brigade because of its capabilities for shock, speed, mobility, and firepower. Normally, raids are so short in time and distance that only a limited amount of supplies can be carried on the combat vehicles. Typical raiding missions are:

- Offensive and defensive counter air operations.
- Attack profiles.
- Enemy aviation attacks.
- DSM and synchronization matrix.

Ambush

4-25. An ambush is a surprise attack by fire from concealed positions on a moving or temporarily halted enemy. It may include an assault to close with and destroy the engaging enemy force. In an ambush, ground does not have to be seized and held.

Feint

4-26. A feint is a limited objective attack; it is a show of force intended to deceive the enemy and draw attention, and if possible, combat power away from a main attack. Normally, the brigade executes a feint as part of a Corps or division attack plan. AMD planning and operations for a feint follow the same sequence as any other offensive operation.

Demonstration

4-27. Demonstration is an attack or show of force in an area where a decision is not being sought. It is made with the intention of deceiving the enemy; however, no contact with the enemy forces is made. For example. AMD can be integrated or assigned overwatch positions that deny enemy aircraft attack or RISTA operations on friendly forces during and after demonstration operations.

Spoiling

4-28. A spoiling attack focuses on disrupting an attack's preparation by clipping or destroying critical systems and forces. Lucrative objectives are the command and control systems, intelligence assets, artillery, transportation, air defense, mobility assets, and critical logistics.

Exploitation

4-29. Exploitation is an offensive task that usually follows a successful attack and is designed to disorganize the enemy in depth. The brigade's mission can include the following:

- Securing objectives in any support contiguous and noncontiguous areas of operation.
- Severing LOCs.
- Destroying enemy units.
- Denying escape routes to an encircled force.

4-30. Exploiting force must have mobility and a balance of fire power. ADA units protecting an exploiting force must be as mobile as the forces. Less mobile assets are utilized to keep open the force's LOCs and protect key logistics facilities and mission command centers. ADA units assigned this mission should be aware of by-passed enemy forces, because they pose significant hazards.

4-31. An ADA battalion must be integrated into the exploiting force and move as part of the operation in order to provide air defense protection over the entire force. The capabilities of the Avenger, linked with the FAAD C3I information systems, provide a continual coverage over the AO.

4-32. Avengers are suited for key terrain and choke point coverage or logistics sites. However, the inability to provide 24 hour coverage restricts the use of this FU during the quick pace of exploitation operations.

Pursuit

4-33. Pursuit is an offensive operation designed to catch or cut off a hostile force attempting to escape, with the aim of destroying it. The enemy force itself is the main objective. The pursuit usually consists of direct pressure and encircling forces. The direct pressure force is designed to prevent enemy disengagement and to inflict maximum casualties. The force must not allow the enemy to break contact. The mission of the encircling force is to move around the enemy force in order to prevent escape and destroy the enemy between the direct pressure and enveloping forces. If the encircling forces cannot get around the enemy force to inflict the desired results, it may be forced to attack the flank of the retreating main body. The division can conduct a pursuit to support the Corps or have a brigade conduct a pursuit internal to division operations.

AVENGER IN THE DEFENSE

4-34. To the same effect, as conducted in the exploitation, ADA systems deployed with the encircling forces must be as mobile as the defended asset. Since penetration occurs deep into enemy territory, the same caution as in a movement to contact must be adhered to. Flexibility, decentralized execution, and the direct fire threat to air defense FUs are key considerations to employment pursuits.

4-35. Battery commanders must employ FUs to prevent the enemy from observing or using attack helicopters to ambush the encircling force. While protecting the flanks of the encircling force, FUs should avoid becoming involved in a direct ground battle with the enemy as with Avenger for example. Avenger is best suited to provide air defense protection for the support area of a unit that is in pursuit, ensuring that their logistics sites are provided coverage.

DEFENSIVE OPERATIONS

4-36. The Avenger platoon leader must perform a mission analysis, ensuring the mission is understood and the commander's intent and supported unit's concept of the operation is clear. The Avenger platoon leader must clearly understand how Avengers will contribute to the force's air defense coverage. Based on these considerations, the platoon leader will develop a coverage plan to support the defensive concept of operations thorough understanding of the supported commander's intent (mission) and the establishment of disengagement criteria. Avengers may follow the brigade-in-zone, providing over-watch protection.

PROTECTION OF DIVISION AND BRIGADE ASSETS

4-37. Avengers are deployed to protect division and brigade assets. Avengers can also be effective in overwatch of the reserve force while it is in the assembly area. Avengers are usually allocated to the force defending against the supporting attack. Avengers are not exclusively employed in rearward locations. They are also effective in support of forwardly deployed assets such as FS and mission command assets.

4-38. A primary consideration in Avenger employment in forward areas is their survivability:

- **Division.** The Avenger's mobility gives the battalion commander added flexibility to protect the force. Caution is required on the part of the commander to preclude risking the weapon systems to the effects of enemy direct fire systems.
- **Corps.** The allocation of the Avenger Corps assets in defensive operations is similar to that of offensive operations. The primary considerations are Corps critical support assets and the weighing of the division where the enemy's main effort is anticipated. In the defense, priority is routinely the protection of mission command, FS, ammo resupply, Class IV, and reserves. As in the offense, the Corps ADA battalion commander must mass ADA forces at the vital place and time to defeat the enemy's air attack, they also, ensure the plan includes the ability to quickly transition to the attack. If tasked to reinforce the forward division that is defending against the main attack, close coordination with the ADA battalion is paramount. Corps Avengers also may defend the division and brigade support assets. Place Avengers with elements that have the potential to move with primary consideration to reinforce reserve units (Corps, division, or brigade). However, Avengers should only provide air defense for reserves while the reserves are out of the direct battle. At this level, the air defense effort is synchronized to defeat all airborne platforms and deny enemy aircraft surveillance. The security area or covering force is a primary concern for Corps ADA battalions. The main consideration is denying the enemy surveillance of the main body. A subsequent benefit is early engagement of possible enemy air attacks going deep.

TYPES OF DEFENSIVE OPERATIONS

4-39. Three types of defensive operations are mobile, area, and retrograde. All apply to both the tactical and operational levels of war. The 3 types of defense also use mobile and static elements. In mobile defenses, static positions help control the depth of enemy penetration and retain ground from which to launch counterattacks. Area defense commanders closely integrate patrols, intelligence units, and reserve forces to cover the gaps among defensive positions. In retrograde operations, some units conduct area mobile defenses or security operations to protect other units that execute carefully controlled support or movement actions. Defending commanders use static elements to fix, disrupt, turn or block the attacker. Mobile elements are used to strike and destroy the enemy.

4-40. Mobile defense orients on the destruction of the enemy force by employing a combination of fire and offense, defense, and delay to defeat an attack. The minimum force possible is committed to pure defense; maximum combat power is placed in a striking force that catches the enemy as it is attempting to overcome that part of the force dedicated to the defense. A mobile defense requires mobility greater than that of the attacker. Defenders place minimum forces forward, forming powerful forces with which to strike the enemy at the most vulnerable place and time. ADA units deceive enemy critical reconnaissance elements and allow less critical reconnaissance elements to draw attention to the friendly forces' secondary efforts.

4-41. Area defense operations are conducted to deny enemies access to designated terrain or facilities for a specified time. In an area defense, the bulk of defending forces deploy to retain ground, using a combination of defensive positions and small mobile reserves. Commanders organize the defense around a static framework provided by defensive positions, seeking to destroy enemy forces with interlocking fires. A security area or covering force normally receiving air defense protection is also part of an area defense.

MOBILITY AND SURVIVABILITY

4-42. The key aspects of supporting mobile defense are mobility and survivability. The moving elements in a mobile defense will be the most vulnerable, not only to an attack but surveillance as well. In infantry divisions, Stingers in man portable configuration will provide air defense protection for attacking elements when stealth is required. Corps ADA elements may augment division main efforts, but their priorities will focus on mission command, sustainment, and security forces.

4-43. During mobile defense, it will be critical to deny enemy surveillance of the AO. This would also include fire direction operations that can be effected with the use of UAS platforms.

AREA DEFENSE

4-44. The battalion commander must carefully analyze the division order for specified and implied tasks. Commanders must understand the intent of the order and what is required for accomplishing the intent. Defensive doctrine describes three general types of defense at the tactical level: area, mobile and retrograde. In defensive situations, the commander's established battle positions are based on the IPB, METT-TC, and the commander's scheme of maneuver. These positions need to be planned and prepared in depth to provide decisive fires against attacking enemy airborne platforms. During preparation of the defense, priority normally goes to the unit preparing positions and obstacles. Once the defensive positions are prepared, priority may go to mission command and support assets. When required, priority shifts to the firing elements. In each situation, FUs must focus on the main AAA. Planning for the defense is based on METT-TC. The commander’s decision support template will result in a scheme of maneuver that synchronizes all the assets that support the operation as a whole, which in turn, contributes to success. Planning must occur as early as possible to allow maximum preparation time by subordinate units. Commanders should understand that reconnaissance and rehearsal is the key to an effective defense; after all, the area defense is a type of defensive operation that concentrates on denying enemy forces access to designated terrain for a specific time rather than destroying it outright.

DELAY

4-45. Delay is another form of retrograde in which a force under pressure trades space for time, by slowing the enemy’s momentum and inflicting maximum damage without, in principal, becoming decisively engaged. The commander will conduct a delay when their forces are insufficient to attack or conduct an area or mobile defense.

Chapter 5

STABILITY OPERATIONS

Stability is an overarching term encompassing various military missions, tasks, and activities conducted outside the United States in coordination with other instruments of national power to maintain or reestablish a safe and secure environment, provide essential governmental services (ADRP 3-0). Avenger support to stability tasks is identical to that in conducting offensive and defensive tasks. While each stability task is different, AMD coordination, planning and execution to meet the mission requirements of the maneuver commander remain the same. This chapter discusses Avenger units in stability operations.

CHARACTERISTICS OF STABILITY OPERATIONS

5-1. Air defense units conduct stability operations in a dynamic environment. They are often time and manpower-intensive. Commanders analyze each mission and adapt the concept of operations, elements of operational design, and factors of METT-TC to fit the situation. They often use lines of effort to visualize an operation and describe it in terms of decisive, shaping, and sustaining operations. However, determining the military actions necessary to achieve the desired political end state can be more challenging than in situations requiring offensive and defensive operations, achieving the end state may be just as difficult.

5-2. During all operations, commanders constantly assess the situation in terms of the application and interrelation of the factors of METT-TC. However, stability operations often require commanders to apply METT-TC differently than they would when conducting offensive and defensive operations. The "enemy," for example, may be a set of ambiguous threats and potential adversaries. Even the mission may change as the situation becomes less or more stable. A mission can be as simple as conducting a briefing to host nation forces in a military-to-military exchange or as difficult as conducting combat operations to accomplish a peace enforcement mission. Stability can be threatened for a number of reasons, and an enemy may be difficult to define or isolate. Depending upon the progress of the operation, the complexity of the mission may change quickly.

5-3. Different factors may be important when analyzing the terrain and the troops and support available in stability operations. What constitutes key terrain is based more on political and social considerations than physical features of the landscape. The personnel assigned or available to a commander could include nontraditional assets, such as host nation police units, contracted interpreters and laborers, or multinational forces. The level of integration and cohesion of a force composed of diverse assets is a key consideration for mission success.

5-4. Time considerations normally are substantially different in stability operations. The goals of a stability operation may not be achievable in the short term. Success often requires perseverance, a long-term commitment to solving the real problem. The achievement of these goals may take years. Conversely, daily operations may require rapid responses to changing conditions based on unanticipated localized conflict among competing groups. Civil considerations are especially critical in stability operations. The civil population, host nation government, nongovernmental organizations, and international organizations can greatly affect achieving stability.

5-5. Stability operations are inherently complex and place great demands on small units. Small unit leaders are required to develop interpersonal skills such as cultural awareness, negotiating techniques, and critical language phrases, while maintaining warfighting skills. They must also remain calm and exercise good judgment under pressure and every level must be flexible and adaptive. Often, stability

operations require leaders with the mental and physical agility to shift from noncombat to combat operations and back again.

5-6. Stability operations help restore law and order in unstable areas outside of the U.S. and its territories. However, the mere presence of AMD does not guarantee stability. Offensive and defensive operations may be necessary to defeat enemies that oppose a stability operation. The ability of AMD to stabilize a crisis is directly related to their perceived ability to attack and defend, as necessary.

PEACE OPERATIONS

5-7. Peace operations (PO) encompass peacekeeping operations (PKO) and peace enforcement operations (PEO) that support diplomatic efforts to establish and maintain peace. ADA conducts PO to support strategic, policy objectives, and their implementing diplomatic activities. Although the U.S. reserves the right to conduct PO unilaterally, it will normally participate in PO under the sponsorship of the United Nations or another multinational organization as referenced in ATP 3-07.31 and JP 3-07.3.

5-8. PKOs are undertaken with the consent of all major parties to a dispute. They are designed to monitor and facilitate implementation of a cease fire, truce, or other such agreement; and to support diplomatic efforts to reach long-term political settlements as referenced in FM 3-07, ATP 3-07.31, and JP 3-07.3. PKO usually involves observing, monitoring or supervising, and assisting parties to a dispute. To achieve objectives, conducting PKO relies on the legitimacy acknowledged by all major "belligerents" and international or regional organizations. They use or threaten force only in self-defense or as a last resort. Information superiority is extremely important during PKO. Information superiority supports warfighting functions, situational understanding, and subordinate PKO-related efforts.

5-9. PEO can apply military force, or threaten its use-normally pursuant to international authorization-to compel compliance with resolutions or sanctions designed to maintain or restore peace and order. Unlike PKO, PEO do not require the consent of all parties. PEO maintain or restore peace and support diplomatic efforts to reach a long-term political settlement. ADA that is assigned a peace enforcement mission must be able to apply sufficient combat power for self-defense and to forcibly accomplish assigned tasks. Units must also be prepared to transition to PKO. PEO normally include one or more of the following 6 subordinate operations:

- Forcible separation of belligerents.
- Establishment and supervision of protected areas.
- Sanction and exclusion zone enforcement.
- Movement denial and guarantee.
- Restoration and maintenance of order.
- Protection of humanitarian assistance.

OPERATIONS IN SUPPORT OF DIPLOMATIC EFFORTS

5-10. Avenger supports diplomatic efforts to establish peace and order before, during, and after conflicts. These operations include preventive diplomacy, peacemaking, and peace building (see JP 3-07.3). For example, Avenger supports preventive diplomacy by conducting preventive deployments or show of force as part of efforts to deter conflict. Support to peacemaking operations often includes military-to-military contacts, exercises, peacetime deployments, and security assistance. Avenger supports peace building and involves the same activities as longer-term foreign internal defense operations. Military support of diplomatic activities improves the chances for success by lending credibility to diplomatic actions and demonstrating the resolve to achieve viable political settlements.

FOREIGN INTERNAL DEFENSE

5-11. Foreign internal defense is comprised of civilian and military agencies of a government that participate in programs conducted by another government to free and protect its society from subversion, lawlessness, and insurgency. It involves all elements of national power and can occur across the range of military operations (military engagement, security cooperation, and deterrence to major operations and campaigns). This type of defense is a primary effort to support friendly nations operating against or

threatened by hostile elements. It promotes stability by helping a host nation establish and preserve institutions and facilities responsive to its people's needs. ADA supporting a foreign internal defense advises and assists the host nation forces that are conducting operations. Foreign internal defense operations are also a specified and significant mission for selected special operations forces (see FM 3-05). This type of operation, however, requires joint planning, preparation, and execution to ensure the efforts of all services and functional components are mutually supportive and focused. The categories of foreign internal defense operations are indirect support, direct support (not involving combat operations), and combat operations to support host nation efforts.

INDIRECT SUPPORT

5-12. Indirect support emphasizes host nation self-sufficiency and builds strong national infrastructures through economic and military capabilities. Examples include security assistance programs, multinational exercises, and exchange programs. Indirect support reinforces host government legitimacy and primacy in addressing internal problems.

DIRECT SUPPORT (NOT INVOLVING COMBAT OPERATIONS)

5-13. DS (not involving combat operations) uses U.S. forces to provide direct assistance to the host nation civilian populace or military. DS includes civil-military operations, intelligence and communications sharing, and logistics. DS does not usually involve transferring arms and equipment or training local military forces.

5-14. Combat operations include offensive and defensive operations conducted by U.S. forces to support a host nation fight against insurgents or terrorists. Normally, using U.S. forces in combat operations is a temporary measure. Foreign internal defense operations are closely scrutinized by a variety of audiences, to include the American public, international organizations, and the host nation population. Hostile propaganda will attempt to exploit the presence of foreign troops to discredit the host government and the United States. Poorly executed, direct involvement by the U.S. military can damage the legitimacy and credibility of the host government and host nation security forces. Eventually host nation forces must stabilize the situation and provide security for the populace.

5-15. Most foreign internal defense activities focus on helping a host nation prevent an active insurgency from developing. If an insurgency already exists or preventive measures fail, foreign internal defense focuses on eliminating, marginalizing, or re-assimilating insurgent elements. The United States provides military support to counterinsurgency efforts, recognizing that military power alone cannot achieve lasting success. U.S. military power cannot, and will not, ensure the survival of regimes that fail to meet their people's basic needs. Military programs and U.S. actions promote a secure environment in which to implement programs that eliminate causes of insurgencies and encourage insurgents to rejoin civil society. As with other foreign internal defense actions, support to a counterinsurgency balances security with economic development to enhance or reestablish stability.

5-16. Other DS includes conducting support to counterinsurgencies within the context of the U.S. ambassador's country plan and the host nation's internal defense and development strategy. The goal is to integrate all resources – civilian and military, public and private – so that host nation combat operations and development efforts complement each other. The intended result is measurable improvement in the economic, social, and political well-being of those supported. ADA can also assist in development programs by helping governmental and private agencies provide essential supplies and services.

5-17. Support to counterinsurgencies helps host governments deal with 2 principal groups: the insurgents and the people. The fundamental cause of insurgent activities is widespread dissatisfaction with standing ethnic, religious, political, social, or economic conditions by some sizable portion of the population. For U.S. military power to be effective in supporting a counterinsurgency, the host government must address or revise its policies toward the disaffected portions of the population. There are few immediate, decisive results in military operations against insurgent forces. When results occur, they are short lived unless the host government acts decisively to address the problems that underlie the insurgency.

5-18. On order by the President or Secretary of Defense, ADA supports insurgencies that oppose regimes that threaten U.S. interests or regional stability. While ADA can be tasked to support an insurgency, Army

special operations forces usually receive these missions. Army special operations forces training, organization, and regional focus make them well suited for these operations. ADA supporting insurgencies may provide logistic and training support, but normally does not conduct combat operations.

Combating Terrorism

5-19. Terrorism is the calculated use of unlawful violence or threat of unlawful violence to inculcate fear. It is intended to coerce or intimidate governments or societies. Terrorists usually pursue political, religious, or ideological goals. Enemies who cannot compete with military forces conventionally often turn to terrorist tactics. Terrorist attacks often create a disproportionate effect on even the most capable conventional forces. Terrorist tactics span from arson to the employing of weapons of mass destruction. ADA routinely conducts operations to deter or defeat these attacks. Offensively oriented operations are categorized as counterterrorism; defensively oriented operations are antiterrorism.

Humanitarian and Civic Assistance

5-20. Humanitarian and civic assistance (HCA) programs consist of assistance provided in conjunction with military operations and exercises. By law (Title 10, U.S. Code, Section 401), HCA are authorized by the secretary of state and planned and appropriated in the Army budget. HCA must enhance the security interests of both the U.S. and host nation and increase the operational readiness of the units and Soldiers performing the mission. In contrast to humanitarian and disaster relief conducted under foreign humanitarian assistance operations, HCA are planned activities with specific budget limitations. HCA is limited to the following categories:

- Medical, dental, and veterinary care for rural areas of a country
- Construction of rudimentary surface transportation systems
- Well drilling and construction of basic sanitation facilities
- Rudimentary construction and repair of public facilities
- Specified activities related to mine detection and clearance, including education, training, and technical assistance.

Appendix A

Reconnaissance, Selection, and Occupation of Position

This appendix presents techniques for reconnaissance, selection, and occupation of position (RSOP) requirements and applications. The techniques for RSOP have been developed to ease the rapid, orderly, and safe movement of air defense systems in the battlefield. Avenger battalion and battery teams displace frequently, whether deployed in forward, contiguous, or noncontiguous areas of operation. They move to support the force plan in response to mission changes. They also move to enhance survivability. RSOP must be part of a unit SOP, be clearly understood, and practiced repeatedly by all members of the platoon.

TECHNIQUES FOR RECONNAISSANCE

A-1. Reconnaissance is the thorough examination of terrain to determine its suitability for accomplishment of the mission. The 3 methods of reconnoitering are map, aerial, and ground.

MAP RECONNAISSANCE

A-2. A study and analysis of a tactical map will provide an appreciation of the terrain and show the best route to the selected location. A map reconnaissance:

- Precedes all other methods. A map should always be available for the AO.
- Allows quick examination of large areas. This is faster than other reconnaissance methods.
- Cannot determine current conditions of the area. The map may be out dated and provide an inaccurate representation of the area.
- Ensures the most security. A map reconnaissance can be conducted in a secure location.

AERIAL RECONNAISSANCE

A-3. If an aircraft is available, the commander or the RSOP officer can see the terrain. An aerial reconnaissance:

- Provides the fastest way to see the terrain.
- Is limited by aerial platform availability, weather, and light conditions.
- Is still an imperfect reconnaissance. Fields of fire, ground conditions, and local threat cannot be determined unless the platform lands.

GROUND RECONNAISSANCE

A-4. A ground reconnaissance is an on-site examination of the terrain. A ground reconnaissance is:

- The most accurate and desirable type of reconnaissance. The route can be evaluated for traffic ability, obstacles, choke points, and key terrain. Firing positions, fields of fire, and AAAs can be analyzed for planning finalization.
- The slowest method of reconnaissance. Covering the distances over potential routes and checking alternate positions is time-consuming.
- Dangerous. The small reconnaissance party could be subjected to threat observation en route or at the objective area.

RSOP SEQUENCE

A-5. Avenger units are employed as a battery or platoon and in support of a task force, the section leaders will normally lead the RSOP party. The sequence of actions for conducting RSOP are summarized below.

RECEIVE THE ORDER

A-6. The Avenger air defense commander meets with his key personnel, passes on the basic order, and briefs his key personnel on the new mission. The commander's briefing includes information on the purpose of the operation, routes, road clearance times, SP and RP locations, and air defense operational times. Each platoon leader reviews his briefing notes, completes pre-combat checklists, and initiates the reverse-planning sequence.

MOVEMENT WARNING ORDER

A-7. The Avenger air defense platoon leader returns to the assembly area, issues a movement WARNORD, and briefs key personnel on the new mission. The movement WARNORD can be:

- Written or verbal.
- Deliver in person.
- Pass over tactical communications nets.

A-8. The WARNORD must include, as a minimum:

- The new mission.
- The location of the planned AO.
- The time of:
  - Release for march order.
  - Cross the SP and RP.
  - Assume operational status at the planned AO.

A-9. The leaders select personnel and equipment to conduct the reconnaissance and assigns tasks to the reconnaissance party personnel. The unit SOP will establish the normal composition and responsibilities of the party. The reconnaissance party for the unit should consist of at least the platoon leader and a representative from each section. The RSOP party also includes a security force.

A-10. As the RSOP party approaches the new location, the leader checks the area. The team leader must ascertain if the tentative map-selected locations will allow immediate occupation for accomplishment of the mission.

A-11. Ground reconnaissance verifies whether the terrain provides good natural concealment; has access roads for primary and alternate routes into the position; provides good observation, fields of fire, and areas of search; and has firm ground that will support the weight of FU equipment.

A-12. Based on METT-TC, mine detection team leaders and chemical, biological, radiological, nuclear, and high-yield explosives detection team leaders check the immediate area to ensure it is free of mines or contamination. A total security plan is then placed in effect. This includes positioning automatic weapons overlooking the main AAA and alternate routes into the position, and establishing other security positions around the area to preclude gaps in the perimeter. A PTL and a sector of fire are assigned to each team, and communications are established with all the positions. Proposed positions plotted during the map reconnaissance should be used if possible.

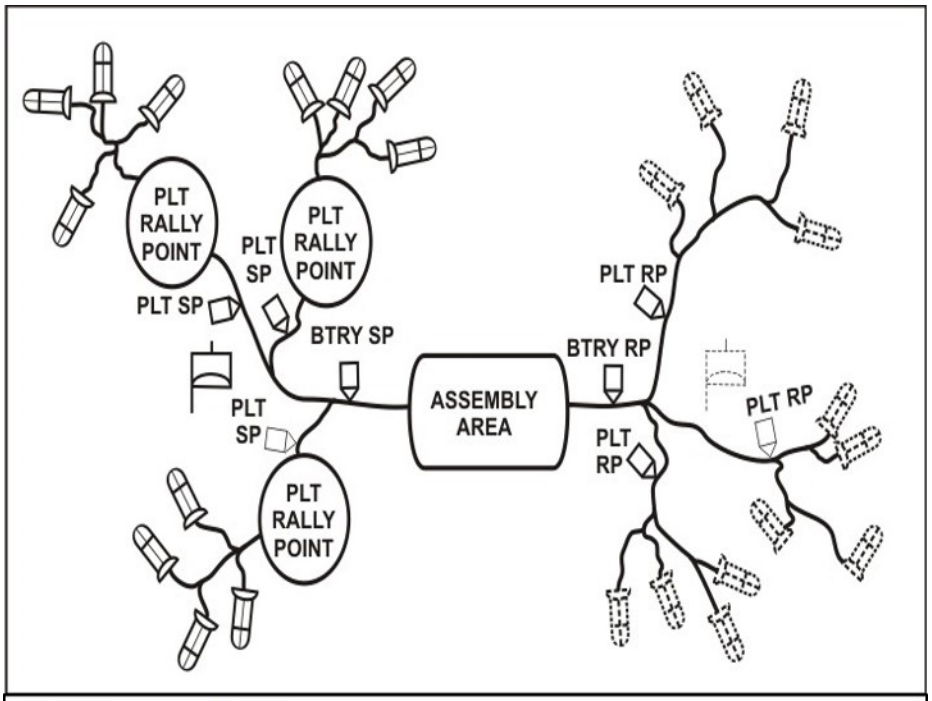
A-13. The section chief will select tentative sites for teams and confirm them with the leader. The leader reconnoiters the area and selects the site for the battery or platoon CP. He visits each proposed weapons site, if possible; and supervises or assists the team leader. After approving the positions, the leader informs the battery commander and the supported unit of the weapons and the CP location.

A-14. Positions selected must be the best available for fields of fire, communications, accessibility, and survivability. The following specific characteristics must be considered in selecting sites for the platoon headquarters:

- CP is centrally located with respect to the supported unit.
- Cover and concealment are available.
- Alternate entrance and exit routes are available.
- Position is defendable against ground attack.
- Establish communications with higher, lower, and supported units.

A-15. The following characteristics must be considered in selecting sites for ADA units:

- Primary and secondary fields of fire; observation must be clear.
- Communications between CPs and other FUs with available EW sources.
- Positions must be within 100 meters of plotted positions in original defense design.
- Defenses may need to be redesigned.
- Positions make maximum use of available cover and concealment to facilitate survivability (see figure A-1).



BTRY	battery
PLT	platoon
SP	starting point
RP	release point

Figure A-1. Facilitate survivability

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Appendix B

Orders and Annexes

This appendix provides an explanation of the different types of orders that the air defense leader uses. An example of an AD estimate and annex to an OPORD also is provided. To execute the plan, the air defense leader must have a thorough understanding of the different types of AD orders and annexes that are received and issued. The leader must then organize thoughts and convey them in a concise and informative manner to subordinates.

WARNING ORDERS

B-1. WARNORDs give subordinate units advance notice of a contemplated action or order, which is to follow. The purpose is to initiate the troop leading procedures of subordinate units. WARNORDs have no prescribed format. The amount of detail included in a WARNORD is dependent on the time available, the means of communication available, and the information necessary for subordinate leaders. As more information becomes available, additional WARNORDs should be issued. WARNORDs are normally brief oral or written orders. The essential information required in a WARNORD is detailed in the steps listed below:

- A heading of "Warning Order" is stated so addressee(s) recognize that orders follow.
- Addressees are to whom the WARNORD pertains.
- Situation is a brief description of the enemy and friendly situation.
- Time and nature of the operation is the time that the mission begins and the mission or probable mission to be accomplished.
- Movement time is the earliest time to move.
- The time and place that the OPORD will be issued.
- Special instructions, to include details of early coordination, rehearsals, special equipment requirements, attachments, environmental considerations, and any other pertinent information.

If there is an acknowledgment statement, then an acknowledgment is required that the WARNORD has been received and understood as shown in table B-1.

Table B-1. WARNORD example

Warning Order	
Alpha battery moves night of 5-6 Aug to assembly area Pinto (VIC YR 1016); prepare to advance early 7 Aug to provide AD for river crossing over Wart River. 1st platoon, attached to Bravo battery effective 051900Z. Road movement plan and OPORD to be issued at 051300Z.	
AD	air defense
OPORD	operations order
VIC	vicinity

OPERATIONS ORDER

B-2. The Army's OPORD format standardizes the content and organization of information essential to clarity and execution of the plan as shown in Table B-2 and page B-3. Leaders at all levels must practice writing and presenting an OPORD. With a little practice, the time consumed writing and giving the OPORD will be significantly reduced. The 5-paragraph OPORD tailored for an ADA battery should, as a minimum, contain the following information:

- Situation.
- Mission.
- Execution.
- Sustainment.
- Command and signal.

Table B-2. OPORD example

(CLASSIFICATION)

Copy # of # copies
Issuing HQs
Place of issue
Date-time group of signature
Message reference number

OPERATION PLAN/ORDER (number) (code name)(classification title)
References:
(U) Time zone used throughout the OPLAN/OPORD:

Task Organization:

(U) Situation. The situation paragraph describes the conditions of the operational environment that impact operations in the following subparagraph:
(U) Area of Interest.
(U) Area of operations.
(U) Terrain
(U) Weather
c. (U) Enemy Forces.
d. (U) Friendly Forces.
e. (U) Interagency, Intergovernmental, and Nongovernmental Organizations.
f. (U) Attachment and Detachments.
g. (U) Assumptions.

2. (U) Mission. State the unit's mission- a short description of the who, what, when, where and why (purpose) that clearly indicates the action to be taken and the reason for doing so.

3. (U) Execution. Describe how the commander intends to accomplish the mission in terms of the commander's intent, on overarching concept of operations, schemes of employment for each warfighting function, assessment, specified tasks to subordinate units and the key coordinating instructions in subparagraphs below.

a. Commander's Intent. The commander's intent is a clear, concise statement of what the force must do and conditions the force must establish with respect to the enemy, terrain and civil considerations that represent the desired end state.

Table B-2. OPORD example (continued)

b. Concept of Operations. The concept of operations is a statement that directs the manner in which subordinate units cooperate to accomplish the mission and establishes the sequence of actions the force will use to achieve the end state.

c. Scheme of Movement and Maneuver. Describe the employment of maneuver units in accordance with the concept of operations.

d. Tasks to Subordinate Units.

e. Coordinating Instructions. (Commander's Critical information Requirements, Essential Elements of Friendly Information, Fire Support Coordination Measures, Airspace Control Measures, Rules of Engagement).

4. (U) Sustainment.

a. Logistics.
b. Personnel.
c. Health Service Support.

5. (U) Command and Signal.

a. Command.
(1) Location of Commanders and Key Leaders.
(2) Succession of Command.
(3) Liaison Requirements.
b. Control.
(1) Command Posts.
(2) Reports.
c. Signal.

(Commander's last name)

(Commander's rank)

OFFICIAL:
(Authenticator's name)
(Authenticator's position)

Annexes: List annexes by letter and title.

FRAGORD

B-3. A FRAGORD is an abbreviated form of an OPORD used to make changes in missions of units or to inform them of changes in the tactical situation. Like WARNORDs, these are usually brief oral or written messages. Mission orders are a form of FRAGORD that provide experienced leaders with the essentials of an order: their mission or a change to a previously issued mission. FRAGORDs may be oral, written, or graphic; in all instances, they are brief (see table B-3, page B-4).

Table B-3. FRAGORD example

FRAGORD
Reference OPORD 7
Map Series V661, sheet 7061, Edition 1, Scale 1:50,000
Task Organization: 4th Platoon DS to brigade support area effective 141400ZJAN
1. Situation: Estimated tank battalion delaying advance of TF 1-6.
2. Mission.: No change
3. Execution: 1st Platoon LOC TS45658934m PTL mils, SOF 5600 mils to 1600 mils.
4. Sustainment: No Change
5. Command and Signal: Battery CP currently at TS 454814.

CP	command post
DS	direct support
LOC	location
OPORD	operations order
PTL	primary target line
SOF	sector of fire
TF	task force

AIR DEFENSE ESTIMATE

B-4. The AD estimate follows the basic staff estimate format. The AD estimate provides information regarding the AMD supportability of proposed courses of action. It also provides recommended AMD priorities and an AMD scheme of operation. This information forms a basis for the air defense plan. An estimate must be constantly re-evaluated to keep it current. The considerations guide the Avenger commander and staff during the estimate and subsequent planning. The degree of detail presented in the estimate depends on the planning time available. However, all elements of the estimate must be considered to make valid recommendations.

ANNEX

B-5. An annex is an integral part of an order that deals with an aspect of an operation. Its purpose is to keep the basic text of an order short. Annexes allow the distribution of certain information to key players in the supported force and should include the following:

- Details that amplify the basic order (operation overlay, intelligence instructions).
- Sustainment operations, such as FS, AD, engineer overlays, traffic circulation, and control instructions.
- Any other information or directions required to amplify the order.

- Environmental considerations that include certification of local water sources; solid and liquid waste management; archeological and historical preservation; hazardous materials management; and a base-field spill plan.

B-6. Many times the battery commander or senior ADA liaison that supports a specific force will be required to write the AD Annex to the supported force's OPORD. Annexes may be issued simultaneously with the order or distributed separately. Unless there is a reason to the contrary, each copy of an order is issued complete with all annexes (see table B-4 for an example).

Table B-4. Annex example

(Classification)

ANNEX E (Protection) to Operations Order #

1. Situation:

2. Mission:

3. Execution: Considerations.

a. WCS and WCS Authority. Include any plans to change WCS.
b. Hostile criteria. Basic rules the commander has established to assist in the identification of friendly or hostile air vehicles. Include any pre-planned changes.
c. Rules of engagement. Address ROE unique to the operation or points in the operation where the changes are intended. Include use of supplemental fire control measure.
d. Passive Air Defense. Specific passive air defense measures that all units should take to protect themselves from air and missile attack or surveillance.
e. Early warning. Review method and format for passing early warning to the entire force.

AMD	air and missile defense
CP	command post
IFF	identification friend or foe
ROE	rules of engagement
WCS	weapons control status

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Appendix C

Rehearsals

This appendix will provide rehearsal techniques for air defenders. The information focuses on preparing Avenger commanders and leaders to plan for and conduct effective rehearsals.

OVERVIEW

C-1. Combat rehearsals are conducted to help a unit gain agility to ensure synchronization, to increase initiative and to improve the depth of a force through practice. Rehearsals are a critical part of the preparation and supervision steps in the troop leading procedures. Rehearsals occur throughout troop leading procedure execution and at different times for different echelons. Commanders and leaders can determine the comprehension of their plan's intent and concept of the operation while performing their rehearsals. Rehearsals for units and Soldiers are unique because air defense units and leaders must not only conduct their own rehearsals, but participate in fire unit rehearsals as well. The challenge for Soldiers, leaders, and commanders is to understand the rehearsal plan and schedule as well as the unit rehearsal plan and schedule.

C-2. Rehearsal planning is crucial without the unique dual responsibilities that units are faced with. The additional rehearsal requirement only makes planning more important. An unplanned rehearsal is useless. The planning section will address rehearsal considerations and recommend responsibilities for ensuring effective rehearsals. Rehearsal preparations are addressed with a focus on checklists to make rehearsal execution run smoothly. The rehearsal execution section addresses rehearsal sequences and rehearsal execution considerations. Each type of rehearsal is defined followed by air defense considerations.

REHEARSAL TECHNIQUES

C-3. The rehearsal techniques are arranged by the amount of time and resources needed to conduct each type. Initially, commander and leaders must determine the type of rehearsal the unit will use to practice the operation prior to execution.

C-4. Commanders and leaders emphasize critical actions and key events that trigger friendly actions. A rehearsal should:

- Occur near or on terrain similar to the actual operation terrain, under the same conditions (such as weather, time of day) as expected during the operation.
- Identify problem areas and contingency actions.
- Enhance coordination.

C-5. A rehearsal also includes all information from the operations overlay, including known and suspected enemy positions, fire control measures, names of key terrain features, and addresses all of the battle operating systems while using the decision support matrix and the decision support template to guide the rehearsal.

- The back brief is a form of rehearsal that is used as often as possible and in conjunction with other rehearsals. A subordinate briefs the commander or leader on what the subordinate's orders are and what the subordinate is supposed to do and why. Commanders and leaders should conduct back briefs with subordinates at the following critical times: Immediately after the OPORD has been issued to ensure the mission, intent, and tasks to subordinate units are understood.
- After the subordinates have formulated their concept of the operation, but before the subordinate OPORDs are issued. This is to ensure the subordinate's plans are consistent with the commander's intent and mission.

- In conjunction with other rehearsals to ensure the operation and rehearsal standards are met.

C-6. Regardless of the type of rehearsal used, critical characteristics are common among all rehearsal types.

C-7. The commander or leader establishes a standard for a successful rehearsal. Critical actions in an operation are practiced in the rehearsal (see table C-1, which is not all-inclusive and the actions are not prioritized).

Table C-1. Operation critical actions prioritized

Offense	Defense
Actions on the objective	Positions
Passage of lines	Trigger points
Breaching	Obstacles
Movement techniques	Counterattack plan
Action at danger areas	Engagement areas
Action on enemy contact (ground)	Action on enemy contact (air)
Action on enemy contact (air)	Security operations
Resupply	Resupply
Medical Evacuation	Medical evacuation
CBRN decon plan	Direct fire plan
CBRN chemical, biological, radiological, nuclear	

AIR DEFENSE RADIO REHEARSAL CONSIDERATIONS

C-8. The radio rehearsal will probably be used more at the air defense battalion level than other rehearsal techniques. The distance between batteries and the battery unit's planning and rehearsal responsibilities will consume most of the time needed to conduct time-intensive rehearsals at the battalion level. The FAAD C4I system will depend heavily on radio rehearsals to verify communication systems are operational and let FUs acknowledge receipt of EW information. Air defense commanders should consider using the radio rehearsal to augment other rehearsals or involve more participants. Table C-2 on page C-3 is an example of a radio rehearsal that demonstrates the use of the back brief and two other rehearsals, (logistics and EW dissemination).

Table C-2. Radio sequenced rehearsal technique and scenario

XO: (Opens with net call) – N4C45 THIS IS C76, NET CALL, RESPOND IN SEQUENCE.

D16: C75 THIS IS D75, ROGER OUT. (D75 IS THE LAST PLATOON CP IN THE SOI SEQUENCE).

BATTERY COMMANDER: (STATES CDR INTENT, THE STANDARDS FOR THE REHEARSAL, AND THE CRITICAL ACTIONS TO BE REHEARSED).

"My intent is….
The standards for the rehearsal are:

Each platoon states their concept of the operations.
The rehearsal will last no more than 30 minutes and each station will limit their transmission to 20 seconds before re-keying their microphone, more to follow.

Focus your efforts on the passage of lines and the seizure of the initial objectives, more to follow.

The rehearsal will end with a practice EW dissemination exercise, over".

XO: (Using a decision support matrix/DSM states situation at passage of lines and initial objectives also discusses sensor plan.)

"Finally sensors one and two occupy sensor positions red 8 and red 9 on OBJ COWBOY as the brigade awaits the order to continue the attack, over"

XO: (addresses selected coordinating instructions and directs initiation of the EW exercise). "The 1SG will begin the logistics radio rehearsal at 2000 hours on alt frequency 1, more to follow."

The rehearsal will follow the battery SOP format for logistics rehearsals.

Stand by for EW dissemination exercise, out."

BDE	brigade	EW	early warning
CDR	commander	SOI	standard operating instructions
CP	command post	SOP	standard operating procedure
DSM	decision support matrix	XO	executive officer

C-9. The battery establishes SOPs when it is necessary to use the radio rehearsal and how to conduct the rehearsal at the home station.

MAP REHEARSAL (1:25,000 OR SKETCH)

C-10. This technique has many variations. The most common is to use a large scale (1:25,000) map and operations overlay on a table with the participants seated around the map. Markers (such as cardboard

cutouts and self-sticking note pads) are used to track each unit as it moves and each event as it occurs. Participants are responsible for representing their scheme with their designated markers.

C-11. There are 2 options to this technique, which include the following:

- Draw a large-scale sketch map of the operations overlay and key terrain features (for example, on the side of a tracked vehicle) and use the sketch in the same manner as the map.
- Move to an area overlooking the operations terrain and have the participants use their own maps and overlays to follow the rehearsal. This option has the added advantage of familiarizing the participants with the actual terrain.

KEY LEADER REHEARSAL ON TERRAIN

C-12. This type of rehearsal is similar to the full dress rehearsal except it requires fewer people. The commander or leader must determine the level of participation. The participants rehearse their tactical plan over terrain and in their vehicles.

FULL-DRESS REHEARSAL

C-13. Full-dress rehearsal is the most effective, but most resource and time intensive, of all the rehearsals. Every Soldier and system is involved in a full-dress rehearsal over terrain and in weather conditions that are at least similar to what is expected in the actual operation.

AIR DEFENSE CONSIDERATIONS

C-14. Avenger battalion and batteries will use these types of rehearsals the least. It is usually not feasible for air defense units to conduct these type rehearsals considering the distances between batteries, platoons, and FUs. An exception is to use these types of rehearsals at home station or as the first rehearsal when time and resources are available.

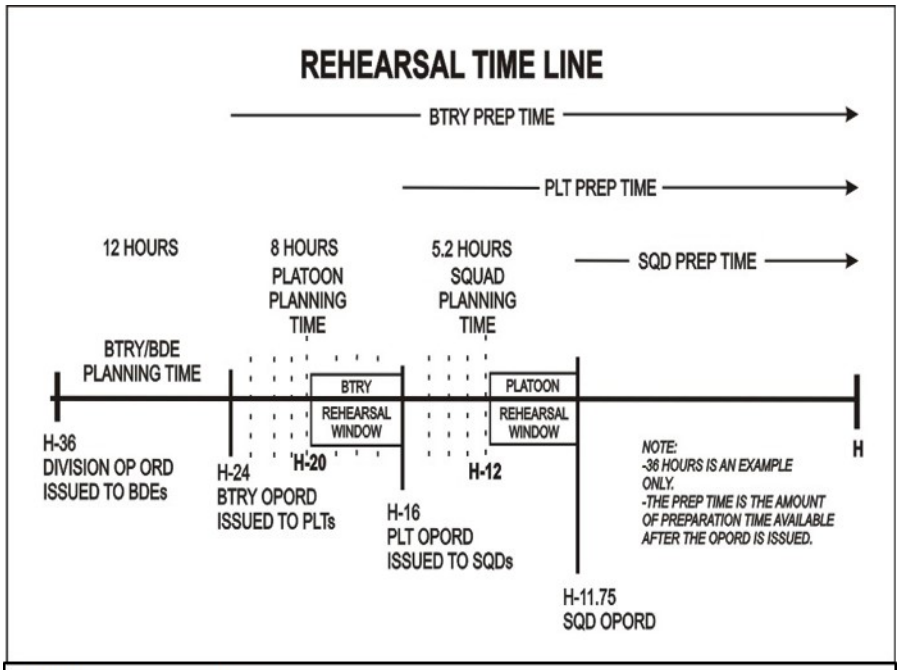
OTHER TYPES OF REHEARSALS

C-15. Other types of rehearsals include the following:

- Operations Center Drills. Combat requirements should be anticipated and rehearsed in the form of TOC or CP drills. The shift officer in charge is the rehearsal director. Examples of TOC or CP battle drills are OPORD, WARNORD, FRAGORD receipt and dissemination, EW receipt and dissemination, casualty evacuation, and resupply.
- Air Defense Engagement Drills. FUs and sensors should rehearse their MTP drills in their assigned position or in terrain similar to their expected position. This allows them to adapt their operations to the existing conditions.
- Air Defense Movement. FUs and sensors should rehearse the movement techniques they expect to use in an operation. These rehearsals will occur with the units as well to synchronize all the moving pieces in an operation. These rehearsals are especially true in breaching and obstacle crossing operations. In addition to movement techniques, system operability checks should be performed to verify communication and reporting links.

REHEARSAL PLANNING

C-16. Rehearsals time line allotment must be considered up front. The commander or leader makes their decision on what type of rehearsal to prepare for based on the planning and time line work completed during the planning process. The most effective rehearsals are those that are planned from the receipt of the first WARNORD until rehearsal execution. Time lines are the most effective tools to aid in allocating time for events. When considering the total amount of time available and the 1/3–2/3 rule, the rehearsal planner can determine the type of rehearsal the unit can afford to perform. In order for rehearsals to be mutually beneficial, the commander or leader should plan a rehearsal window that allows subordinates enough time to develop their own rehearsal timeline (see figure C-1 on page C-5).



BTRY	battery
PLT	platoon
OPORD	operations order
SQD	squad

Figure C-1. Rehearsal timeline example

REHEARSAL PREPARATION

C-17. Once the decision has been made on the type of rehearsal and when and where it will occur, preparation begins. The site must be prepared to replicate the operations graphic and fire control measures and terrain features. To aid the preparation, the TOC or CP should maintain a terrain model or sand table kit. Recommended materials for a terrain model kit include the following:

- Tape measure (100 yards or meters long).
- Engineer tape (minimum of 500 meters).
- String, to mark grid lines.
- Yarn (red, blue, green, and yellow).
- Nails and tent stakes.
- Index cards (3 x 5 and 5 x 7 laminated).
- Alcohol pens.
- Grease pencils.
- Pre-made military symbols.
- Pre-made unit symbols.
- Magnetic compass.
- Hammer.
- Chalk.
- Entrenching tool.
- Sandbags.
- Cotton balls.
- Spray-paint (red, blue, yellow, and green).

C-18. The size of the terrain model or the time available may necessitate using additional personnel for preparation. The size of the terrain model can vary from a tabletop arrangement (sandbox) to a model where the participants actually walk through a scaled-down version of the terrain. A terrain model large enough to allow the key leaders to walk over a scaled-down version of the terrain helps participants to visualize the battlefield. The first step in creating an accurate terrain model is to prescribe the scale. This is easily accomplished by walking off several steps per kilometer or using some other form of measurement. For example, if the zone of attack is 10 kilometers by 6 kilometers, the builder of the terrain model could assign one step per kilometer and walk off the scale of the terrain model.

C-19. The second step in developing an accurate terrain model is to lay down selected grid lines based on the tactical map. With the grid lines established, the builder has a handy reference to measure the size and locations of the terrain features. This simple step greatly increases the accuracy of the terrain model and ensures that the terrain features are the proper scale. The terrain model should depict all required information shown on the operations overlay and situation map to include key terrain features, enemy positions (known and suspected), and fire control measures. Place an arrow on the terrain map to depict north for orientation. Label all phase lines numbers, hills, and objectives with their appropriate names. The terrain should mirror the operations and enemy overlays and include the air portion of the IPB. Once the terrain model is complete, position a map and operations overlay behind or on the side of the model as a point of reference.

Note. Usually the executive officer (XO) at battery level and the S-3 or XO at battalion level frees the commander to command and participate rather than run a rehearsal. Platoons can apply similar techniques in their own rehearsals.

REHEARSAL EXECUTION

C-20. Unit SOPs will establish exactly how and who will run rehearsals, but as a minimum, the rehearsal needs a director (for example, the rehearsal director using the platoon sergeant or senior squad or section leader). The following is a step-by-step process for conducting a brigade rehearsal:

- Step 1. Start at the appointed time and conduct a formal roll call. Ensure everyone brings binoculars, maps, and necessary equipment.
- Step 2. Ensure that the rehearsal director orients the terrain model to the actual ground, the operations overlay, and the map. Generally, describe and point out the overall AO and explain the markers used on the terrain model.
- Step 3. Brief the timeline. Designate the rehearsal start time. For example, have the rehearsal begin by depicting the anticipated situation 1-hour before the line of departure. Set the time interval to be used to start and track the rehearsal (such as specifying a ten-minute interval to equate to 1 hour of real time during operation).
- Step 4. Designate a recorder. Highlight the ground rules and incorporate ground rules into the unit SOP. Include who controls the rehearsal and who actually walks the terrain board, how the rehearsal will be controlled, and when special staff officers brief. Special staff officers should brief by exception when a friendly or enemy event occurs within their AO operating system.
- Step 5. The S-3 (or XO at battery level) reads the mission statement and the commander's intent; assist the S-3 or XO in laying out the friendly situation as it currently exists, using the terrain model.
- Step 6. The S-2 (or XO at battery level) briefs the current enemy situation and the most likely enemy COA (the enemy situation should already be set up on the terrain model). The S-2 also briefs the status of the reconnaissance & surveillance plan, for example, citing the most recent EW tracks.
- Step 7. The S-2 (or XO at battery level) briefs friendly unit dispositions at the rehearsal start time, including sensor positions. Other staff officers brief their subordinate unit positions at the start time, as well as any particular points of emphasis. For example, the chemical officer briefs Mission Oriented Protective Posture level, and the sensor platoon leader briefs the sensor management plan and updates the participants on the status of EW tracks in the last 12 hours.

- Step 8. The commander gives appropriate commands. Battery commanders and platoon leaders tell when they occupy positions, change readiness condition and anticipate air attack. The XO talks for any staff section not present and ensures all actions listed on the synchronization matrix or decision support template are addressed at the proper time or event. Avoid re-wargaming except as absolutely necessary to ensure subordinate unit commanders fully understand the plan. If the staff has developed an order that addresses contingencies, there is little need to re-wargame the operation at the rehearsal site.
- Step 9. The enemy is portrayed by the, S-2 section or XO at the battery level. The S-2 section walks the enemy through the most likely COA (situation template), stressing reconnaissance routes, objectives, security force composition and locations, initial contact, initial fires (artillery, air, attack helicopters), probable main force objectives or kill sacks, likely chemical attack times and locations, and the commitment of reserves. The S-2 must be specific by tying enemy actions to specific terrain or friendly unit actions. The walk through should be an accurate portrayal of an event template.
- Step 10. Terminate the first phase of the rehearsal after the desired end-state (from the commander's intent) is achieved. In the attack, this is usually on the objective after consolidation. In the defense, this is usually after the decisive action, such as the commitment of reserves and the final destruction or withdrawal of the enemy.
- Step 11**.** When it becomes obvious that additional coordination is required to ensure success of the operation, try to immediately accomplish it. This coordination is 1 of the key points of the rehearsal. Make sure it is clearly understood by all participants and captured by the recorder and all changes to the published OPORD are in effect. As soon as possible, the S-3 or XO at the battery level should collect the verbal FRAGORDs into written change to the OPORD.
- Step 12. After the initial walk-through of the base order, recheck the situation at the initial decision point. State the criteria for a decision to change the plan. Assume these criteria have been met and then restart the battle from that point forward until the desired end-state is attained. Complete any coordination to ensure understanding and requirements are met. Record any changes.
- Step 13. Go to the next decision point and ensure that the criteria have been met. Repeat step 12.
- Step 14. Repeat step 13 until all decision points have been rehearsed.
- Step 15. Key support items and actions need to briefed, including plans for casualty evacuation routes, ambulance exchange point locations, refuel on the move, Class IV or V resupply points, forward logistics bases, planned locations and effective times, logistics RPs, displacement times and locations for support areas, and enemy prisoners of war collection points. These items and actions also should be integrated into the rehearsal at the appropriate times.
- Step 16. After the rehearsal is complete, the recorder should restate any changes, coordination or clarifications directed by the commander; and estimate the time that a written FRAGORD to the changes will be issued.
- Step17. The commander should stress any points needing additional emphasis and consider reiterating the intent (purpose, method, and end-state) to remind all participants that the goal is to accomplish the mission.

AVENGER DEGRADED OPTIONS

C-21. During degraded operations Avenger teams can be employed further from the asset than non-degraded teams to achieve early engagement and defense in depth. Additionally, degraded Avenger teams can be sited perpendicular, as well as head on, to hostile incoming aircraft. Listed below are 6 steps for Avenger employment. The defense of a critical static asset is normally planned using a map. The following steps explain the planning techniques.

C-22. Should the Avenger weapon system experience problems that prevent it from accomplishing its mission (termed degraded) the Stinger can be converted to the shoulder-fired configuration by removing a missile-round from 1 of its 2 Avenger missile pods. A grip stock (2 grip stocks assigned per Avenger fire unit) is then attached to the Stinger launch tube (missile-round) and the Stinger becomes a shoulder-fired system, allowing Stinger to be employed as a backup weapon.

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Appendix D

Sentinel Radar Sensor

This appendix describes the Sentinel radar sensors AN/MPQ-64 and AN/MPQ-64A1 improved Sentinel and their roles as air defense surveillance and target acquisition or tracking sensors for Avenger weapons in the division and Corps AOs. Both, the Sentinel and improved Sentinel's accurate and quick-reacting capabilities enables air defense weapon systems to acquire targets sufficiently beyond the FLOT, reducing reaction time and allowing engagement at optimum range.

SENTINEL RADAR SENSOR (AN/MPQ-64)

D-1. Sentinel's mission is to alert or cue the Patriot, Avenger, and Stinger teams in man portable configuration, of hostile fixed-wing and rotary-wing aircraft, cruise missiles, or UASs to protect friendly forces from fratricide and provide an air picture and situational data to the C4I centers.

D-2. The Sentinel radars are mobile, compact, modular, multi-function, phased-array radars. Each consists of a radar antenna unit mounted on top of the transceiver unit. The radar antenna unit also includes an IFF interrogator, an IFF antenna, and an auxiliary electronic counter-counter measure antenna mounted on a single pedestal that rotates during operation. The antenna unit is lowered by hand crank to the stowed position for road march.

D-3. The Sentinel advanced, 3-dimensional battlefield X-band air defense phased-array radar is designed to operate under all battlefield conditions. These conditions include clear and obscured day or night operations, adverse weather, dust, smoke, aerosols, precipitation clutter environments and countermeasures while providing 360-degree azimuth coverage for acquisition and tracking.

D-4. The FAAD data link interfaces with the SINCGARS VRC-92A radio with the EPLRS PJHI hardwired to a C4I system.

D-5. The Sentinel electronic counter-counter measure capability detects on extremely low side-lobes wide-band frequency Agile Sector Blank Track on jam strobe Variable Pulse Repetition Rate.

IMPROVED SENTINEL RADAR SENSOR (AN/MPQ-64A1)

D-6. Operation of the A1 is controlled at the FAAD C4I control point. Once the A1 is turned on and initialized, the operation of the A1 is automatic. Target data and target classification data is supplied automatically to a data link.

HMMWV PRIME MOVER & SUPPORT VEHICLE 1097

D-7. The HMMWV 1097 is the prime mover & support vehicle for both Sentinels. HMMWV transports the tactically quiet 10 kilowatt generator, communications equipment, cabling for system power, team tactical gear, water, and rations (see figure D-1, page D-2).

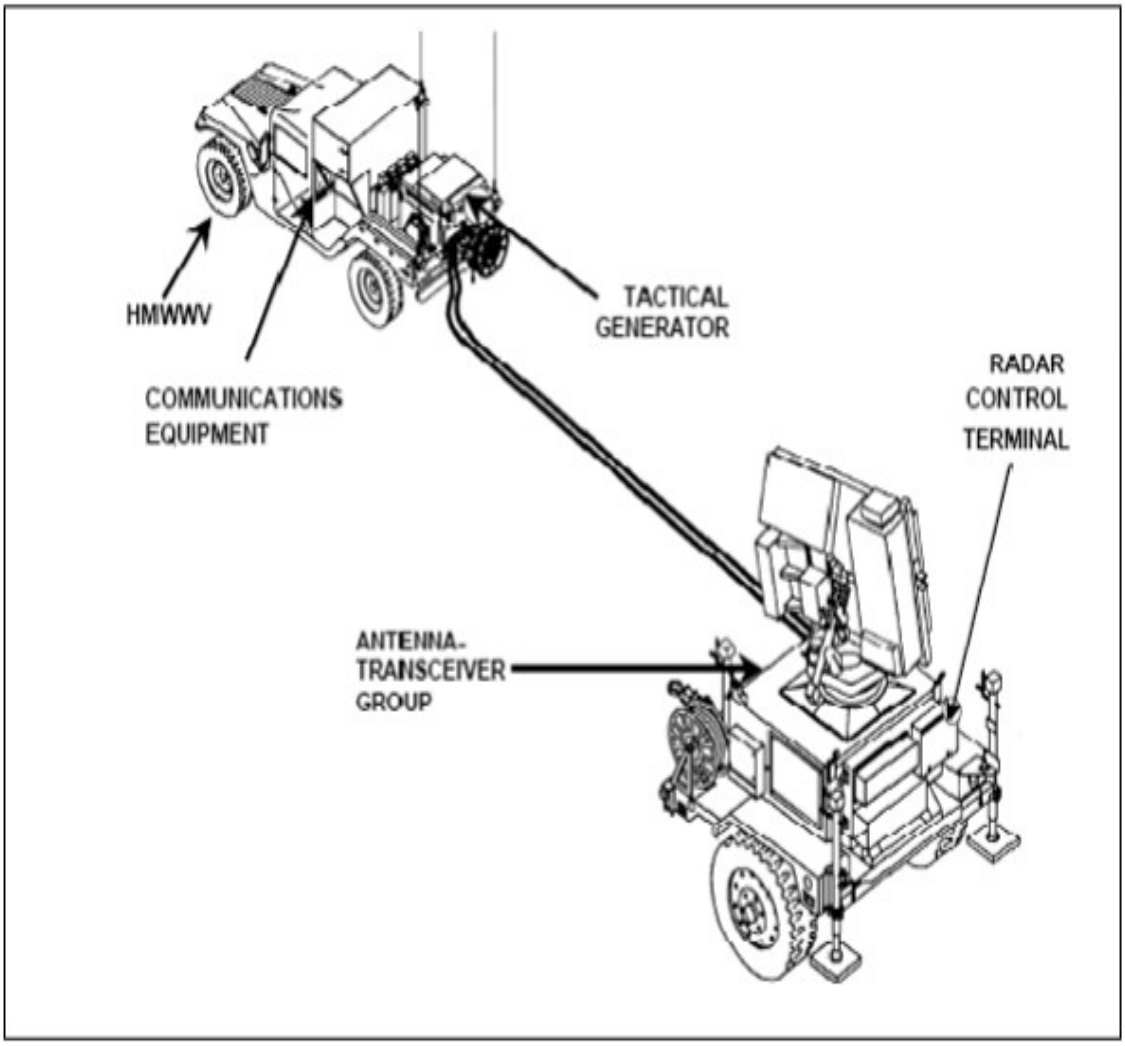


Figure D-1. HMMWV 1097 vehicle

D-8. The Sentinel radars mobile, compact, modular, multi-function, phased-array radars with an instrumented range of 40 km. They consist of a radar antenna unit mounted on top of the transceiver unit. The radar antenna unit also includes an IFF interrogator, and an IFF antenna. Sentinel's integrated IFF reduces the potential for fratricide of Army Aviation and USAF aircraft. An auxiliary electronic counter-counter measures antenna is mounted on a single pedestal that rotates during operation. The antenna unit is lowered by hand crank to the stowed position for road march.

Appendix E

Avenger for Homeland Defense

The purpose of this appendix is to describe Avenger command, control, and communications - specific planning, coordination, and interoperability for an integrated air defense system, in support of the National Capital Region Act. It facilitates decisions by highlighting link and communications architecture and interoperability capabilities considered by the JFC and subordinate functional and Service component commanders when developing an integrated air defense system. The target audience is JFC and joint task force staff planners, component and functional commanders, and those unit commanders participating in and providing assets to a Joint operations area or specific AO. Additionally, it provides the Soldier and planner with a single-source reference for service-specific air defense capabilities and limitations.

MISSION

E-1. Air defense forces fight interdependently with other elements of Joint, interagency, intergovernmental, multinational teams at strategic, operational, and tactical levels to provide effective air defense and contribute to SA, situational understanding and airspace management to defeat or deter enemy aerial threats.

E-2. Avenger National Guard units are presently assigned the responsibility of homeland defense. Their mission is to provide mission command, limited homeland defense, personnel protection, and operational area security.

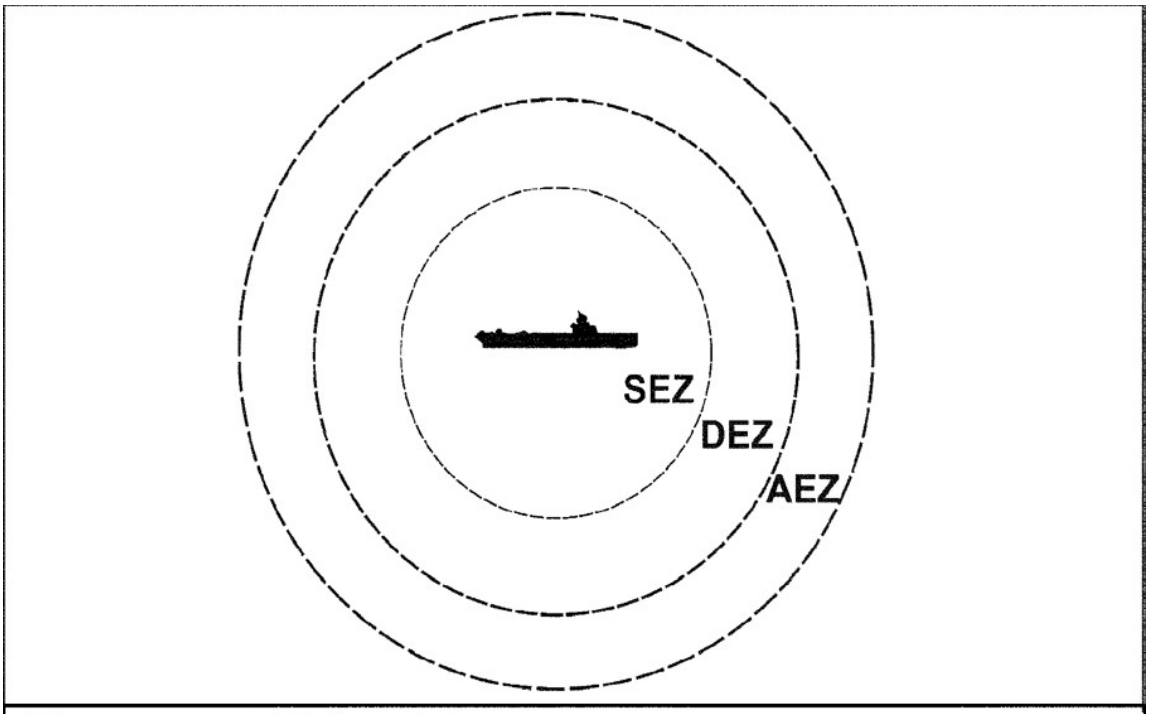
AIR DEFENSE IDENTIFICATION ZONE (ADIZ) OPERATION REQUIREMENTS

E-3. Operations that will enter or exit the United States or which will operate into, within, or across the contiguous U.S., regardless of airspeed, must operate and comply with control zone requirements. This control zone is known as an ADIZ. Any aircraft operating within an ADIZ will be required to have on board and operational the following items:

- Flight plan, which was filed before departure.
- 2-way radio required for majority of operations.
- Unless otherwise authorized, transponder.

ENGAGEMENT ZONES

E-4. Track information is passed to interceptor aircraft, under the S-2, or commanding or deputy commanding general control, to confirm identification and engage if warranted (figure E-1, page E-2).



AEZ	air engagement zone
DEZ	dual engagement zone
SEZ	ship engagement zone

Figure E-1. Engagement zones

COMMAND RELATIONSHIPS

E-5. For detailed discussion of relationships, agencies, and responsibilities see JP1 and JP 3-01. Table E-1 on page E-3 shows the specific command relationship that defines the level of authority a commander has over assigned or attached forces.

Table E-1. Command relationships

Command Relationships
Combatant Command (Command Authority) **(Unique to Combatant Commander)** • Planning, Programming, Budgeting and Execution Process Input • Assignment of subordinate commanders • Relations with Department of defense Agencies • Directive authority of logistics **When the Operational Control is delegated:** • Authoritative direction for all military operations and joint training. • Organize and employ command and forces • Assign command functions to subordinates. • Establish plans and requirements for intelligence, surveillance, and reconnaissance activities. • Suspend subordinate commanders from duty. **When Tactical Control is delegated:** • Local direction and control of movements or maneuvers to accomplish mission. **When Support relationship is delegated:** • Aid, assist, protect or sustain another organization.

SUPPORT CATEGORIES

E-6. There are 4 types of support categories that commanders provide which are:

- **General Support.** Given to the supported Force as a whole, and not to any particular subdivision.
- **Mutual Support.** That support which units render each other against an enemy, because of their assigned tasks, their position relative to each other and to the enemy, and their inherent capabilities.
- **Direct Support.** A mission requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance.
- **Close Support.** That action of the supporting force against targets or objectives which are sufficiently near the supported force as to require detailed integration or coordination of the supporting action with the fire, movement, or other actions of the supported force.

STATE OF ALERT – HIGHEST (1) TO LOWEST (4)

E-7. The following State of Alert levels are used in Homeland Defense tactics, ranging from the highest level of concern (Level 1) to the lowest level (Level 5):

- State of Alert 1 – RED.
- State of Alert 2 – ORANGE.

- State of Alert 3 – YELLOW.
- State of Alert 4 – GREEN.
- State of Alert 5 – BLUE.

CODE WORDS

E-8. The following code words direct forces in, out, and around the engagement zones:

- **Bugout**. Procedure directing BLUE FORCES out of the joint engagement zone.
- **Bullseye**. Reference point near the center of the National Capitol Region ADIZ.
- **Harrier and Huntsman.** Call signs for U.S. helicopters.
- **Headbutt (or Divert).** Directs BLUE FORCES to immediately divert unauthorized aircraft out of restricted airspace.

Glossary

SECTION I - ACRONYMS AND ABBREVIATIONS

AAA	air avenue of approach
ABCS	Army Battle Command System
ABMOC	air battle management operations center
ACA	airspace control authority
ACUS	Army Common User System
AD	air defense
ADA	air defense artillery
ADDS	Army Data Distribution System
ADIZ	air defense identification zone
ADP	Army doctrine publication
ADRP	Army doctrine reference publication
ADW	air defense warnings
AMD	air and missile defense
AMDWS	air and missile defense workstation
AO	area of operations
ATP	Army techniques publication
C4I	command, control, communications, computers, and intelligence
COA	course of action
CP	command post
DAGR	Defense Advanced Global Positioning Receiver
DP	decisive point
DS	direct support
DSM	decision support matrix
EPLRS	Enhanced Position Location Reporting System
EW	early warning
FAAD	forward area air defense
FBCB2	Force XXI Battle Command-Brigade and Below
FLOT	forward line of own troops
FRAGORD	fragmentary order
FS	fire support
G-3	assistant chief of staff, operations
GPS	Global Positioning System
GS	general support
GS-R	general support-reinforcing
HCA	humanitarian and civic assistance
HMMWV	high mobility multipurpose wheeled vehicle
IFF	identification, friend or foe
IHFR	improved high frequency radio
IPB	intelligence preparation of the battlefield
JFC	joint force commander
JP	joint publication

KM	kilometers
LADW	local air defense warning
LOC	line of communications
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, and civil considerations [mission variables]
MIDS	Multifunctional Information Distribution System
NAI	named area of interest
OPORD	operation order
PEO	peace enforcement operations
PKO	peacekeeping operations
PO	peace operations
PTL	primary target line
R&S	reconnaissance & surveillance
RISTA	reconnaissance, intelligence, surveillance, and target acquisition
ROE	rules of engagement
RP	release point (road)
RSOP	reconnaissance, selection, and occupation of position
R/T	receiver transmit
S-1	battalion or brigade manpower and Human Resources officer
S-2	battalion or brigade intelligence staff officer
S-3	battalion or brigade operations staff officer
S-4	battalion or brigade logistics staff officer
S-6	battalion or brigade signal staff officer
SINCGARS	Single-Channel Ground and Airborne Radio System
SOP	standard operating procedure
TAI	target area of interest
TDMA	time division multiple access
TOC	tactical operations center
TSOP	tactical standard operating procedure
UAS	unmanned aircraft system
U.S.	United States
WARNORD	warning order
WCS	weapons control status
WFZ	weapons free zone
XO	executive officer

SECTION II - TERMS

area of interest

(DOD) That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission. Also called AOI. (JP 3-0)

area of operations

(DOD) An operational area defined by the joint force commander for land and maritime forces that should be large enough to accomplish their missions and protect their forces. Also called AO. See also area of responsibility; joint operations area; joint special operations area. (JP 3-0)

command post

A unit's headquarters where the commander and staff perform activities. Also called CP. (FM 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)

situational understanding

The product of applying analysis and judgment to relevant information to determine the relationship among the operational and mission variables to facilitate decisionmaking. (ADP 5-0)

warfighting function

A group of tasks and systems (people, organizations, information, and processes), united by a common purpose that commanders use to accomplish missions and training objectives. (ADRP 3-0)

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ATP 3-18.2
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MARK A. MILLEY
General, United States Army
Chief of Staff

Official:

GERALD B. O'KEEFE
Administrative Assistant to the
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