Joint Publication 3-01

Countering Air and Missile Threats

21 April 2017

PREFACE

1. Scope

This publication provides doctrine for joint operations to counter air and missile threats.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff (CJCS). It sets forth joint doctrine to govern the activities and performance of the Armed Forces of the United States in joint operations, and it provides considerations for military interaction with governmental and nongovernmental agencies, multinational forces, and other interorganizational partners. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs), and prescribes joint doctrine for operations and training. It provides military guidance for use by the Armed Forces in preparing and executing their plans and orders. It is not the intent of this publication to restrict the authority of the JFC from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of objectives.

3. Application

a. Joint doctrine established in this publication applies to the Joint Staff, commanders of combatant commands, subordinate unified commands, joint task forces, subordinate components of these commands, the Services, and combat support agencies.

b. The guidance in this publication is authoritative; as such, this doctrine will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence unless the CJCS, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the US, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable and consistent with US law, regulations, and doctrine.

For the Chairman of the Joint Chiefs of Staff:

KEVIN D. SCOTT
Vice Admiral, USN
Director, Joint Force Development

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SUMMARY OF CHANGES
REVISION OF JOINT PUBLICATION 3-01
DATED 23 MARCH 2012

- **Discusses the relationship between counterair and integrated air and missile defense.**
- **Modifies counterair description and definition to place focus on gaining and maintaining control of the air to meet joint force commander objectives.**
- **Discusses theater and global aspects of integrated air and missile defense.**
- **Incorporates global missile defense into main body of document (eliminates appendix).**
- **Discusses global strike in the context of countering air and missile threats.**
- **Modifies definition of global missile defense (eliminates term global ballistic missile defense).**
- **Discusses counter-rockets, artillery, and mortars.**
- **Combines selected air defense and ballistic missile defense discussions under air and missile defense.**
- **Expands definitions of weapons engagement zones, missile engagement zones, and joint engagement zones to include provisions for ballistic missiles.**
- **Discusses cyberspace operations support to countering air and missile threats.**
- **Consolidates discussion of identification.**
- **Discusses countering unmanned aircraft systems.**
- **Modifies terms, definitions, and acronyms.**

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- **Discusses Command and Control**
- **Explains Countering Air and Missile Threat Planning**
- **Covers Offensive Planning and Operations**
- **Addresses Defensive Planning and Operations**

Introduction

Countering air and missile threats provides friendly freedom of action and protection, and helps deny the enemy freedom of action.

Countering air and missile threats consists of a combination of counterair and integrated air and missile defense (IAMD). Counterair is the foundational framework at the theater level. IAMD is an approach that synchronizes aspects of counterair with global missile defense (MD); homeland defense (HD); global strike; and counter-rocket, artillery, and mortar (C-RAM).

Air and Missile Threats

Adversary air and missile threats continue to grow in quantity and capability. **Air threats** include aircraft (manned and unmanned) and aerodynamic missiles. A **ballistic missile** (BM) is any missile that does not rely upon aerodynamic surfaces to produce lift and follows a ballistic trajectory when thrust is terminated. **Rockets, artillery, and mortars** (RAM) have been employed frequently and successfully by our enemies against air bases, forward operating locations, forward operating bases, and critical infrastructure.

Counterair

The counterair mission integrates offensive and defensive operations to attain and maintain the joint force commander's (JFC's) desired degrees of control of the air and of protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. **Offensive counterair (OCA)** includes four operations: attack operations, suppression of enemy air defenses (SEAD), fighter escort, and fighter sweep. **Defensive counterair (DCA)** encompasses air and missile defense

(AMD), which is direct (active and passive) defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and BM threats against friendly forces and assets.

Supporting Homeland Defense

The forces and capabilities employed by geographic combatant commanders to defend their areas of responsibility may also support a layered defense beginning in the forward areas against air and missile threats to the homeland

The homeland is the geographic region that includes the continental US, Alaska, Hawaii, US territories, and surrounding territorial waters and airspace. The Commander, US Northern Command, in concert with missions performed by North American Aerospace Defense Command and the Commander, US Pacific Command, have specific responsibilities to plan, organize, and execute HD operations within their respective areas of responsibility (AORs).

Global Operations

Global operations to counter air and missile threats include global MD and global strike. **Global MD** encompasses MD operations, activities, or actions that affect more than one geographic combatant commander (GCC) and require synchronization among the affected commands to coordinate effective allocation, deployment, and employment of capabilities necessary to deter and prevent attacks, destroy enemy missiles, or nullify or reduce the effectiveness of an attack. **Global strike** is the capability to rapidly plan and deliver extended-range attacks, limited in duration and scope, to create precision effects against enemy assets in support of national and theater commander objectives.

Integrated Air and Missile Defense (IAMD)

IAMD is designed to deter, and failing that, to prevent an enemy from effectively employing air and missile assets.

IAMD is the integration of capabilities and overlapping operations to defend the homeland and US national interests, protect the joint force, and enable freedom of action by negating an enemy's ability to create adverse effects from their air and missile capabilities. At the theater level, IAMD consists of DCA supported by OCA attack operations. Beyond the theater level, IAMD emphasizes the integration of these counterair operations with global MD, HD, and global strike.

Command and Control

Support Relationships

The supported combatant commander (CCDR) retains direct responsibility for the campaign or operation as a JFC or may designate a subordinate JFC or component commander to plan and execute a campaign or operation. Unless otherwise directed by the President/Secretary of Defense, the GCCs of targeted AORs are the supported commanders for global MD operations within their AOR. Two CCDRs who are typically designated as supporting CCDRs are Commander, US Transportation Command, who supports force deployments and movements, and Commander, United States Strategic Command (CDRUSSTRATCOM), who synchronizes planning and coordinates support for global MD operations to minimize operational seams across AOR boundaries, provides missile launch warnings and space and strategic forces/capabilities, and federated intelligence support between CCDRs, as described in Joint Publication 2-01, *Joint and National Intelligence Support to Military Operations*.

Joint Force Commander

In operations of limited scope or duration, the JFC may organize and conduct counterair operations using the joint force staff (e.g., the operations directorate of a joint staff). If the JFC designates a joint force air component commander (JFACC), the JFACC may also be designated as the supported commander for strategic attack, air interdiction, and airborne intelligence collection (among other missions). As a joint mission, counterair is conducted by all components with the necessary capabilities, with the JFC/JFACC ensuring unity of command (or unity of effort), centralized planning and direction, and decentralized execution. When the JFC organizes the joint force, in addition to a JFACC, the JFC also normally designates an area air defense commander (AADC) (for DCA) and an airspace control authority (ACA) (for joint airspace control).

Component Commanders

The Services, with Department

Some of the Service components are capable of establishing regional/sector air defense (AD) command posts and providing the regional air

of Defense agencies, support a complex and complementary array of sensor, weapon, command and control, and battle management capabilities that are integrated to form the IADS, airspace control system, and theater air-ground system.

defense commanders (RADCs)/sector air defense commanders (SADCs). The commander, **Army** air and MD command, is normally designated the theater Army air and MD coordinator for the theater Army commander or the joint force land component commander, if one is established. The **Navy** component commander/numbered fleet commander, who can be designated as the joint force maritime component commander, plans and executes joint maritime operations within an operational area. Navy forces can provide aircraft to conduct OCA and DCA from the carrier air wings embarked on aircraft carriers or from carrier or expeditionary aircraft-based ashore. During joint operations, the **Marine** air-ground task force (MAGTF) aviation combat element (ACE) will be in support of a MAGTF ground combat element (GCE) to accomplish the MAGTF mission. The MAGTF ACE is sized to support the GCE. The MAGTF can support both OCA and DCA operations. Counterair is a primary function of the **Air Force** forces (AFFOR) during joint operations. The AFFOR can make available sensor systems, command and control (C2) systems, and weapon systems and is capable of providing one or more RADCs/SADCs throughout the joint operations area (JOA), including within the land component area of operations.

Joint Force Air Component Commander

The JFACC plans, directs, and executes counterair operations throughout the theater/JOA in accordance with JFC guidance and priorities, and therefore determines the priority, timing, and effects of counterair fires throughout the theater/JOA. For theater-level IAMD, OCA attack operations are commanded by the JFACC and DCA is commanded by the AADC. The JFACC is responsible for integration between the offensive and defensive counterair components of IAMD.

Area Air Defense Commander

The JFC designates an AADC with the authority to plan, coordinate, and integrate overall joint force DCA operations. An integrated air defense system (IADS) is normally established by the AADC for DCA with the joint air operations center leading its operation. With the support of the component

commanders, the AADC develops, integrates, and distributes a JFC-approved joint area air defense plan (AADP).

Deputy Area Air Defense Commander

When a significant portion of the DCA capability is contributed by a component other than that of the AADC, a senior officer from that component may be designated by the JFC or AADC as a deputy area air defense commander (DAADC). DAADC responsibilities include assisting in AADP development; integrating respective component and multinational AMD into DCA operations; and advising on rules of engagement (ROE), coordination measures, weapons control measures, and AD warnings.

Regional and Sector Air Defense Commanders

During complex operations/campaigns conducted in a large JOA/theater of operations, the AADC may recommend, and the JFC may approve, the division of the operational area into separate AD regions, each with a RADC who could be delegated responsibilities and decision-making authority for DCA operations within the region. The AADC and RADC, as approved by the JFC, may choose to further divide regions into sectors, each with a SADC with appropriate authority for their responsibilities.

Airspace Control Authority

The ACA coordinates use of airspace through the airspace control plan (ACP), including integration with the host-nation airspace control system, and synchronizes/deconflicts all user requirements using the airspace control order (ACO).

Multinational Command Relationships

The JFACC/AADC may expect no more than tactical control over multinational force (MNF) counterair units/capabilities, and very likely, may have simple support relationships based on mission-type orders. The AADC should ensure MNF ROE, engagement authorities, and procedures are consistent with the combined AADP and the MNF ability to identify friendly forces in order to prevent gaps and ensure joint air forces are not subject to an increased risk of friendly fire and MNF are not restricted from self-defense.

Requirements, Infrastructure, and Resources

C2 systems must be capable of rapidly exchanging information, interfacing among components, and displaying a common tactical picture (CTP) to all participants. The C2 infrastructure must consist of interoperable systems that provide complete coverage for an integrated diverse force spread across a theater/JOA including considerations for any MNF assets. Service components, the joint force special operations component commander, and specialized joint communications elements provide the core of the communications capabilities for C2 for the joint force. The **Air Force theater air control system** provides resources for a C2 infrastructure that can support the AFFOR or joint operations. The **Army air-ground system** is the control system for synchronizing, coordinating, and integrating air operations with an Army land force commander's scheme of maneuver. **Navy Tactical Air Control System** is the principal air control system afloat. The **Marine air command and control system** provides the Marine ACE commander with the capability to command, control, and influence the application of Marine aviation assets.

Planning

General

Theater planning is discussed within the context of counterair. Counterair requires a combination of OCA and DCA operations based on the JFC's air apportionment decisions, balanced against the enemy's potential courses of action and air and missile threats. Global planning addresses global MD and offensive operations that affect more than one CCDR and require synchronization among them. Global planning includes coordination of cross- and multi-AOR aspects of offensive and defensive operations.

Joint Intelligence Preparation of the Operational Environment and Intelligence Preparation of the Battlespace

Joint intelligence preparation of the operational environment supports counterair planning by identifying adversary air and missile capabilities, location of critical assets and infrastructure, likely employment methods, and environmental characteristics in the operational area. **Intelligence preparation of the battlespace** assists the counterair planner in visualizing the operational

environment, assessing adversary air and missile capabilities, and identifying the adversary's probable intent and attack locations.

Planning and Coordination Requirements

The following broad principles of planning are essential for effective airspace control: interoperability, unity of effort, mass and timing, integrated planning cycles, and degraded operations. The ACP should include processes to establish procedural coordination measures, including activating/deactivating weapon engagement zones (WEZs) and minimum-risk routes and procedures for AMD and airspace control operations in a degraded communications environment.

Coordination Measures

Airspace control requires a combination of positive and procedural controls that rely on proper identification (ID) of the users. ID is discussed in Section D, "Identification." Positive control requires radar or other sensor tracking and direct communications between the airspace controller and the user. Procedural controls are established through coordination measures and amplifying guidance found in the ACP/ACO and special instructions.

Identification

ID is the process of determining the friendly or hostile character of an unknown detected contact and the product (classification) of that process.

Methods of Identification

The intent of an ID process is to either facilitate airspace control or to support an engagement decision through combat identification (CID). ID can be accomplished through several recognized methods, which include positive ID, procedural ID, auto-ID, formation assessment, and formation tracking.

Identification, Commit, and Engagement Authorities

Execution of the **ID policy** is normally delegated to the tactical level, but care must be taken that the tactical commander is capable of performing the ID function in real time. The AD echelon with **commit authority** is permitted to authorize assets to prepare to engage an entity (e.g., position a DCA fighter to intercept or direct an AD artillery unit to

track and target). Commit authority does not imply engagement authority. **Engagement authority** is an authority vested with a JFC that may be delegated to a subordinate commander that permits an engagement decision. The AMD authority with engagement authority is permitted to authorize engagement of an air or missile threat. For AMD engagements within the theater, the authority is normally delegated to the AADC who may further delegate the engagement authority to tactical levels (e.g., RADC/SADC).

Combat Identification

CID is the process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision.

Asset Protection

Because there may not be enough defensive capabilities to defend everything within a theater, the JFC and staff, normally the plans directorate of a joint staff, develops a prioritized critical asset list (CAL) for each phase of an operation with inputs from the components and based on the level of protection required to support tasks/missions assigned by the JFC. The defended asset list is a prioritized list of those assets on the CAL that are covered by JFC AMD capabilities.

Global Missile Defense Planning

Per the Unified Command Plan, CDRUSSTRATCOM synchronizes planning for global MD in coordination with other CCDRs, the Services, and as directed with appropriate US Government departments and agencies. Planning for global MD should include coordination of launch warnings, offensive operations that support a ballistic missile defense (BMD) strategy, plan assessment metrics, allied/partner integration, global force management, and C2 of BMD operations.

Offensive Planning and Operations

Offensive Counterair and the Joint Air Operations Plan

Since the preponderance of OCA operations are conducted with joint air forces/capabilities that are integrated in action through the joint air operations plan, OCA planning is an integral part of this overall joint air operations planning. OCA

planning includes targeting enemy air and missile threats, C2, and supporting infrastructure.

Enemy Integrated Air Defense Systems

An enemy IADS attempts to destroy, disrupt, or neutralize intelligence collection and air and missile attacks or other penetrations of their airspace. To degrade the effectiveness of OCA operations, enemy defensive tactics may include jamming aircraft navigation, communications, target acquisition systems, and precision weapons guidance systems.

Attack Operations

OCA attack operations are offensive actions against targets that contribute to the enemy's air and missile capabilities. The objective of attack operations is to prevent the hostile use of enemy aircraft and missiles by attacking them and their supporting elements and infrastructure with the fires necessary to create the desired effects.

Suppression of Enemy Air Defenses

SEAD missions neutralize, destroy, or temporarily degrade surface-based enemy ADs by destructive or disruptive means.

Fighter Escort

As an OCA mission, fighter escort sorties are normally flown over enemy territory to protect other primary mission aircraft from enemy fighters en route to and from a target area during offensive missions (i.e., for air interdiction, OCA attack operations, SEAD, and airborne operation).

Fighter Sweep

The fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

Global Strike

Global strike is the capability to rapidly plan and deliver extended-range attacks, limited in duration and scope to create precise effects against adversary assets in support of national and theater commander objectives.

Defensive Planning and Operations

Defensive Counterair Planning

DCA planning should adhere to the following principles: centralized planning and direction, decentralized execution, preplanned responses, effective and efficient communications, layered

defense, 360-degree coverage, early ID and tracking, timely alert and warning, and effective uses of modes of control.

Defensive Counterair Assets and Supporting Capabilities

Assets used in conducting DCA operations normally include fighters, surface-to-air missiles, antiaircraft artillery, sensors, and cyberspace operations and electronic warfare all networked using a resilient and flexible C2 architecture with interoperable data links, voice command circuits, and operator displays of the CTP. If OCA is not possible before threat aircraft or missiles are launched, DCA, which is by nature reactive, must be flexible enough to prevent the enemy from gaining the initiative.

Integrated Air Defense System

An IADS is not a formal system in itself but the aggregate of Service/functional component and agency AMD systems comprising sensors, weapons, C2, communications, intelligence systems, and personnel operating in a theater/JOA under the control of an AADC. Additionally, a theater AMD system typically depends on support and enabling functions from national assets and systems not controlled by the JFC.

Identification and Tracking

As a track is detected, it is identified and labeled and this information is disseminated as rapidly as possible. The track data provided is sufficiently detailed and timely to allow decision makers to evaluate the track, determine the significance of the threat, and either designate DCA forces for interception or engagement, or advise units of the passage of friendly aircraft.

Active Air and Missile Defense Planning

Active AMD consists of AD and BMD. During planning, multiple options should be developed using various combinations of weapon systems, WEZs, and tactics allowing the flexibility to defend all critical assets. For certain surface-based AMD systems, the three modes of control are centralized, decentralized, and autonomous. The mode of control will depend upon the capabilities of the C2 systems being employed and both the friendly and enemy air situations. Some of the same design considerations listed for AD planning are generally

applicable to BMD planning; specifically, types of defensive coverage develop the active fire plan, determine surface-based defenses C2 coverage and fire control, and weapons readiness states. Additional BMD design considerations include: positioning of the assets, defended area, launch area denied, firing doctrine, BMD sensor deployment, BMD interceptor airspace considerations, and radiation hazards.

Passive Air and Missile Defense Planning

Passive AMD provides individual and collective protection for friendly forces and critical assets and is the responsibility of every commander in the joint force. It includes measures, other than active AMD, taken to minimize, mitigate, or recover from the consequences of attack aircraft and missiles.

Area Air Defense Plan

The AADP is a plan of action for DCA operations. It prescribes the integration of active and passive AMD design, C2 procedures, and supporting mission aspects to provide a comprehensive approach to defending against the threat. The AADP is developed by the AADC in coordination with the joint force components and JFC staff, integrating DCA operations throughout the theater/JOA.

Defensive Counterair Operations

The AADC controls the battle using approved authorities (e.g., ID, commit, and engagement) and the flexibility of the IADS. To decentralize execution, the AADC will normally delegate some or all AADC authorities down to the RADC/SADC level (if established). The AADC must specify the conditions and limits within which engagement authority is decentralized.

Passive Air and Missile Defense Operations

Passive AMD measures, to include detection, warning, camouflage, concealment, deception, dispersion, hardening, and the use of protective construction, are highly reliant on intelligence, strategic warning, and tactical warning to implement actions at the appropriate state of conflict. The AADC and chain of command are responsible for timely warning of attacks. Component commanders and their forces have delegated responsibilities to ensure passive AMD

measures are planned and executed in a timely manner down to the unit level.

Global Missile Defense

Global MD encompasses MD operations, activities, or actions that affect more than one GCC and require planning synchronization among the affected commands to deter and prevent attacks, destroy enemy missiles, or nullify or reduce the effectiveness of an attack.

Counter Rockets, Artillery, and Mortars

C-RAM is a mission to detect and engage incoming RAM in order to protect friendly forces and high-value assets, as well as provide advanced warning to affected areas. C2 for C-RAM operations is normally the responsibility of the local base defense operations center or the tactical operations center.

CONCLUSION

This publication provides doctrine for joint operations to counter air and missile threats.

CHAPTER I
INTRODUCTION

"If we lose the war in the air, we lose the war and we lose it quickly."

Field Marshal Bernard Montgomery
British Army, 1908-1958

1. General

a. Countering air and missile threats provides friendly freedom of action and protection, and helps deny the enemy freedom of action. Advancing technology and the proliferation of aircraft and missiles have expanded the scope and complexity of protecting friendly forces and vital interests. US forces must be capable of countering air and missile threats across the range of military operations.

b. Unity of command and unity of effort, centralized planning and direction, and decentralized execution are key tenets for countering air and missile threats. Clear command relationships and assigned responsibilities are central to conducting effective and efficient operations. Centralized planning includes planning at both theater and global levels. The area air defense plan (AADP), the associated defensive counterair (DCA) estimate, and the joint air operations plan (JAOP) are required for mission success. Execution is normally decentralized below the geographic combatant commander (GCC) level.

c. Countering air and missile threats consists of a combination of counterair and integrated air and missile defense (IAMD). Counterair is the foundational framework at the theater level. IAMD is an approach that synchronizes aspects of counterair with global missile defense (MD); homeland defense (HD); global strike; and counter-rocket, artillery, and mortar (C-RAM).

d. The strategic environment is uncertain, complex, and changes rapidly. While the basic character of war has not changed, the character of conflict has evolved. The military environment and the threats it presents are increasingly *transregional*, *multi-domain*, and *multi-functional* (TMM) in nature. TMM will cut across multiple combatant commands (CCMDs), across land, sea, air, space, and cyberspace. The strategic environment is fluid, with changing alliances, partnerships, and national and transnational threats that rapidly emerge, disaggregate, and reemerge. These factors will significantly affect how the joint force conducts counter air and missile threat operations. Despite our best planning and the application of sound intelligence combined with the other joint functions, we can expect uncertainty and ambiguity to exist in strategic and operational environments.

2. Air and Missile Threats

a. Adversary air and missile threats continue to grow in quantity and capability. The proliferation of weapons of mass destruction (WMD), coupled with means of delivery, greatly increases the potential lethality of any adversary and elevates the importance of maintaining robust capabilities to protect US and friendly forces and areas.

b. **Air Threats.** Air threats include aircraft (manned and unmanned) and aerodynamic missiles.

(1) **Aircraft**

(a) Manned aircraft include bombers; fighters; intelligence, surveillance, and reconnaissance (ISR); electronic warfare (EW); transports; helicopters; civilian aircraft; and air refueling (AR) aircraft.

(b) Unmanned aircraft (UA) fall into two basic categories: larger, high-flying, faster, unmanned aircraft systems (UASs), which, for air defense (AD) purposes, are treated similarly to manned air threats; and low, slow, and small (LSS) UASs, which are an evolving and difficult-to-detect threat utilizing advanced technologies.

For additional information on countering LSS UAS, see Army Techniques Publication (ATP) 3-01.15 [Field Manual (FM)] 3-01.15/Marine Corps Reference Publication (MCRP) 3-25E/Navy Tactics, Techniques, and Procedures (NTTP) 3-01.8/Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

(2) **Aerodynamic Missiles.** Aerodynamic missiles use lateral surfaces to maintain their flight path. This category includes air-breathing missiles (e.g., cruise missiles [CMs], air-to-surface missiles [ASMs], air-to-air missiles [AAMs], and surface-to-air missiles [SAMs]).

c. **Ballistic Missiles (BMs).** A BM is any missile that does not rely upon aerodynamic surfaces to produce lift and follows a ballistic trajectory when thrust is terminated. BM systems are becoming more flexible, reliable, and accurate, and are increasing their ability to penetrate MDs. While close-range BMs, short-range BMs, and medium-range BMs are predominant today, a number of states have acquired or seek to acquire longer-range BMs (intermediate-range ballistic missiles [IRBMs] and intercontinental ballistic missiles [ICBMs]). These states are also developing WMD warheads for their BMs. The potential for proliferation to state and non-state actors may also affect regional and global stability.

d. **Rockets, Artillery, and Mortars (RAM).** The indirect fire (IDF) threat is enduring and growing in capability. RAM have been employed frequently and successfully by our enemies against air bases, forward operating locations, forward operating bases (FOBs), and critical infrastructure. RAM provide adversaries an expedient, low-cost means to disrupt operations.

e. **Other Threat Trends**

(1) **Enemy Capabilities.** The detection capabilities, engagement ranges, mobility, and lethality of SAM systems have all improved with technological advances. Combined with more-capable fighter aircraft and air-to-air weapons, these technological advances have enabled the enemies' abilities to project air power and contest our ability to achieve control of the air. Advanced fighters, CMs, and UA also present elusive targets that are difficult to detect, identify, and engage with current counterair capabilities and procedures. The

development of hypersonic weapons, combining the speed and range of BMs with the maneuverability of aerodynamic missiles, further stresses the capabilities of defensive systems.

(2) **Antiacess/Area Denial Strategies.** Adversaries may employ antiaccess/area denial strategies designed to prevent the protected buildup of US forces. Most antiaccess/area denial strategies today rely in some measure on the threat or employment of advanced aircraft and/or missiles that may be employed alone or in coordinated operations with other antiaccess/area denial capabilities. Targets may include attacks on the infrastructure supporting US power projection capability (e.g., seaports, sea bases, airfields, satellites, and communications networks [COMNETs]) and military and political targets. In this environment, adversary use of WMD against US forces, allies, and interests should not be ruled out. Since nations can acquire modern missiles relatively cheaply, the number of countries with a small but lethal offensive missile capability will likely continue to increase.

(3) **Use of Civilian Aircraft.** Consideration must be given to the potential for irregular forces using civilian aircraft to attack friendly forces. Countering such threats requires: intelligence to provide situational awareness of the civilian aircraft infrastructure and irregular threat capabilities; a security system to prevent illicit use of civilian aircraft; and the proper use of detection, tracking, identification (ID), and combat identification (CID) measures to engage these threats while avoiding engaging innocent civilian aircraft.

(4) **Cyberspace and Electromagnetic Spectrum (EMS).** Since most US and allies/partners' resources and equipment use communications and computerized systems reliant on digitized information, friendly forces are vulnerable to cyberspace and electromagnetic operational environment manipulation.

(5) **Space.** Space-based assets provide critical situational awareness and capabilities to counter air and missile threats against US forces. Theater missile warning; positioning, navigation, and timing; and satellite communications are space-based functions vital to operating in a complex security environment. US forces and missions may be vulnerable to threats directed at these space-based capabilities.

For more information pertaining to space, see Joint Publication (JP) 3-14, Space Operations.

3. Counterair

a. The counterair mission integrates offensive and defensive operations to attain and maintain the joint force commander's (JFC's) desired degrees of **control of the air** and of **protection** by neutralizing or destroying enemy aircraft and missiles, both before and after launch. Counterair operations are conducted across the spectrum of conflict, using all means to ensure access and freedom of action. These operations may use aircraft, AAMs, surface-to-surface missiles (SSMs), SAMs, UA, artillery, ground forces, special operations, space operations, cyberspace operations (CO), EW, and other capabilities to create the desired lethal and/or nonlethal effects.

(1) **Control of the Air.** The desired degree of control of the air may vary geographically and over time from no control, to parity, to local air superiority, to air supremacy, all depending upon the situation and the JFC's concept of operations (CONOPS). Counterair operations usually begin early in the conduct of a campaign to produce the desired degree of control of the air and protection at the times and places chosen by the JFC. In some situations, the commander may have limited resources, which are only adequate to establish control of the air for specific periods of time or over only a portion of the threats (e.g., against aerodynamic but not ballistic threats). Accordingly, control of the air may not totally eliminate the air and missile threats. Air superiority is that degree of control of the air by one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats. Historically, air superiority has proven to be a prerequisite to success for an operation/campaign because it prevents enemy air and missile threats from interfering with operations of friendly air, land, maritime, space, and special operations forces, thus facilitating freedom of action and movement. Air supremacy is that degree of control of the air wherein the opposing force is incapable of effective interference within the operational area using air and missile threats. JFCs conduct continuous counterair operations to maintain the desired degree of control of the air over the US homeland, key US and friendly assets, within international airspace, and over designated portions of friendly and enemy territory.

(2) **Protection.** The protection function focuses on conserving the joint force's fighting potential. One of the key tasks associated with protection is providing air and missile defense (AMD). In this regard, the JFC protects US and friendly forces, US vital interests, friendly population centers, logistic sites, other critical assets, and politically sensitive assets of host nations (HNs) during all phases of operations. To adequately protect the force, commanders must combine employment of complementary defensive weapon systems and sensors (including active and passive AMD) with other capabilities, such as cyberspace capabilities and EW. These operations not only defend against attack, but also help ensure US forces can strike potential threats prior to their employment against friendly forces.

b. The counterair mission is inherently a joint and interdependent endeavor. Each component of the joint force contributes capabilities necessary for mission success. In addition, Service capability and force structure development reflect an increasing reliance on all components to leverage complementary and reinforcing effects while minimizing relative vulnerabilities. Unity of command and unity of effort, centralized planning and direction, and decentralized execution are vital tenets for countering air and missile threats. Joint forces must be integrated to exploit the mutually beneficial effects of synchronized offensive and defensive operations to destroy, neutralize, or minimize air and missile threats.

c. **Counterair Framework.** The counterair framework is based upon the integration of offensive counterair (OCA) and DCA operations, by all capable joint force components, against both air and missile threats. Generally, OCA operations seek to dominate enemy airspace and prevent the launch of threats, while DCA operations defeat or reduce the effectiveness of enemy air and missile threats attempting to penetrate or attack through friendly airspace. See Figure I-1.

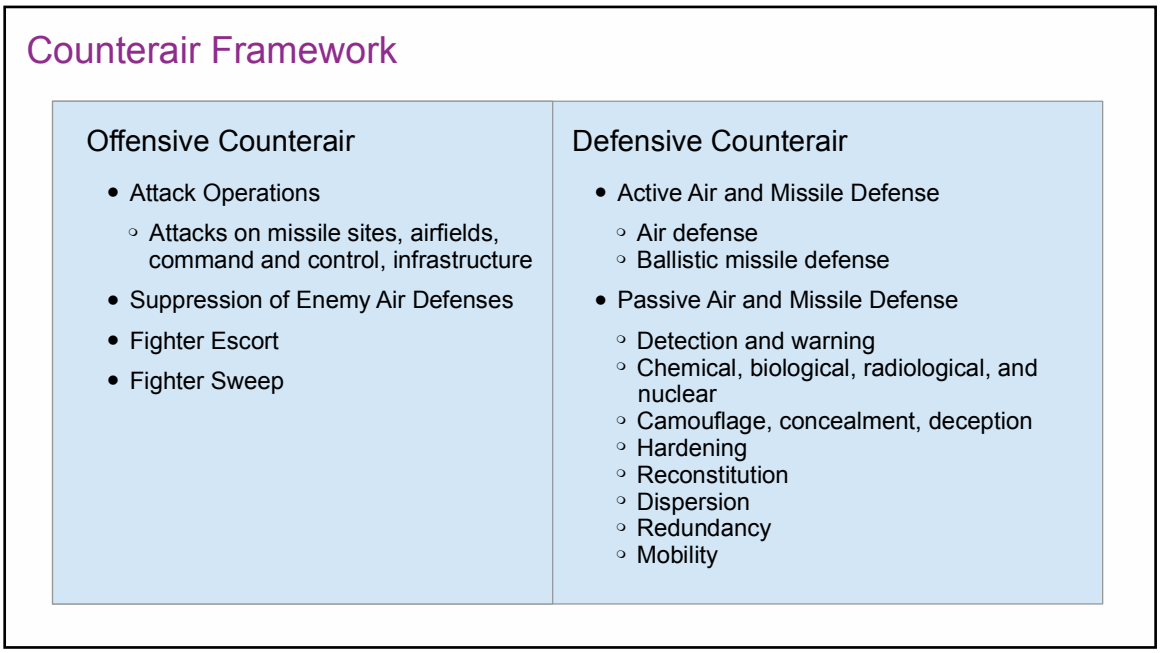

Figure I-1. Counterair Framework

(1) OCA

(a) OCA operations destroy or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, as close to their source as possible. The goal of OCA operations is to prevent or disrupt the launch of enemy aircraft and missiles by engaging them and/or their overall supporting infrastructure prior to employment. Assets and capabilities used to support OCA include aircraft (manned and unmanned, fixed-wing, tiltrotor, and rotary-wing), AAMs, ASMs, CMs, special operations forces (SOF), surface-to-surface fires, ground maneuver forces, EW, CO, and intelligence collection systems.

(b) OCA missions support countering air and missile threats by providing control of the air, thus providing the JFC with freedom to conduct offensive operations. OCA operations are the preferred method of countering air and missile threats because they reduce the level of the threat that defensive forces must face. OCA operations are normally a high priority as long as an enemy has the air and missile capability to threaten friendly forces and regions or to conduct aerial surveillance and reconnaissance. OCA operations also include targeting those assets that enable enemy air and missile capabilities, such as: petroleum, oils, and lubricant facilities; airfield facilities; missile reload and storage facilities; aircraft repair structures; and command and control (C2) facilities.

(c) OCA includes four operations:

1. **Attack Operations.** OCA attack operations include offensive action by any part of the joint force in support of the OCA mission against targets which contribute to the enemy's air and missile capabilities. Some Services refer to these as strike operations. Global strike may also be available to support OCA attack operations.

2. **Suppression of Enemy Air Defenses (SEAD).** Activity that neutralizes, destroys, or degrades surface-based enemy ADs by destructive and/or disruptive means. Global strike may also support SEAD.

3. **Fighter Escort.** Fighter escort provides dedicated protection sorties by air-to-air capable fighters in support of other offensive air and air support operations over enemy territory or in a DCA role to protect aircraft such as high-value airborne assets (HVAAs).

4. **Fighter Sweep.** Fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

(d) OCA efforts should be properly planned for, directed, and integrated with other offensive operations. OCA operations, in addition to supporting operations against adversary air and missile targets, support missions such as strategic attack, air interdiction, and close air support (CAS).

Detailed discussions of the OCA missions can be found in Chapter IV, "Offensive Planning and Operations."

(2) **DCA.** DCA is all defensive measures within the theater designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. DCA encompasses AMD, which is direct (active and passive) defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and BM threats against friendly forces and assets. The goal of DCA operations, in concert with OCA operations, is to provide an area from which forces can operate while protected from air and missile threats. DCA operations must be integrated and synchronized with OCA operations and all other joint force operations. The area air defense commander (AADC), if established by the JFC, is responsible for DCA planning and operations.

(a) **Active AMD.** Active AMD is direct defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and BM threats against friendly forces and assets. Active AMD includes AD and ballistic missile defense (BMD). The aggregation of these elements provides for an integrated air defense system (IADS) that is unique to each JFC and contributes to defense in depth, with the potential for multiple engagements that increase the probability for success.

1. **AD.** AD is defensive measures designed to destroy attacking aircraft and aerodynamic missiles, or to nullify or reduce the effectiveness of such attack. It includes the use of aircraft, SAMs, antiaircraft artillery (AAA), CO, EW (including directed energy), multiple sensors, and other available weapons/capabilities. AD includes defense against CMs and UASs.

2. **BMD.** BMD is defensive measures designed to destroy attacking enemy BMs, or to nullify or reduce the effectiveness of such attack. Integration of BMD systems will allow for a defense in depth, with the potential for multiple engagements that increase the probability for success.

(b) **Passive AMD.** Passive AMD is all measures, other than active AMD, taken to minimize the effectiveness of hostile air and BM threats against friendly forces and assets. These measures include detection, warning, camouflage, concealment, deception, dispersion, hardening, and the use of protective construction. Passive AMD improves survivability by reducing the likelihood of detection and targeting of friendly assets and thereby minimizing the potential effects of adversary reconnaissance, surveillance, and attack. Passive AMD measures are considered the same for air and BM threats, with one exception: detection and warning of BM attack is normally provided by supporting assets from outside the theater/joint operations area (JOA) in concert with deployed AMD C2 systems and sensors.

Further discussion of DCA can be found in Chapter V, "Defensive Planning and Operations."

(3) **Counterair Integration and Synchronization**

(a) Synchronization of counterair operations within the theater is vital to maximizing effectiveness, avoiding duplication of effort, and preventing friendly fire incidents. Counterair integration and synchronization must occur within and across the following areas:

1. DCA elements. This includes active and passive AMD capabilities and measures.

2. OCA elements. This includes all joint forces capable of contributing to OCA.

3. OCA and DCA. Although OCA and DCA are considered separate operations, they should facilitate unity of effort through integration and synchronization. Many of the same forces may be required for both OCA and DCA operations; therefore, early, continuous, and close coordination is required. Integrating a mixture of capabilities from Service components bolsters the friendly force potential and will likely frustrate the enemy's ability to threaten the joint force with air and missile capabilities.

4. Component commanders. Services should operate in concert with each other to maximize the effectiveness of joint fires. For example, if the adversary is successful in launching BMs against US forces and multinational forces (MNFs), the joint force relies on the defensive coverage provided by US Navy and US Army AMD systems.

5. Adjacent areas of responsibility (AORs). Cross-AOR planning and operations are critical for effectiveness against longer range threats.

6. US and Allied forces. The capabilities of US forces and allies should be integrated and leveraged to achieve maximum warfighting potential.

(b) Considerations for integrating and synchronizing counterair include:

1. Use a single commander with an adequate C2 system for both OCA and DCA operations. Typically, this is the joint force air component commander (JFACC), who normally is also the AADC and the airspace control authority (ACA).

2. Establish and monitor an interoperable and robust C2 system from the JFC/JFACC/AADC through the component commanders and down to the tactical units to facilitate the centralized planning and direction and decentralized execution normally required for counterair.

3. Establish an effective communications architecture for counterair due to the time-sensitivity of some targets. This architecture must connect sensors to intelligence nodes, decision makers, and operators throughout the operational area.

4. Supporting Homeland Defense

a. **General.** There is no higher priority than the security and defense of the US homeland. HD is the protection of US sovereignty, territory, domestic population, and critical infrastructure against external threats and aggression or other threats as directed by the President. Per the Unified Command Plan (UCP), a general responsibility of combatant commanders (CCDRs) is to "detect, deter, and prevent attacks against the United States, its territories and bases, and employ appropriate force to defend the nation should deterrence fail." The homeland is the geographic region that includes the continental US, Alaska, Hawaii, US territories, and surrounding territorial waters and airspace. The Commander, United States Northern Command (CDRUSNORTHCOM), in concert with missions performed by North American Aerospace Defense Command (NORAD) and the Commander, United States Pacific Command (CDRUSPACOM), have specific responsibilities to plan, organize, and execute HD operations within their respective AORs. Proliferation of advanced technologies has increased the potential threat to the homeland from a rogue nation, failed state, or terrorist group. The forces and capabilities employed by GCCs to defend their AORs may also support a layered defense beginning in the forward areas against air and missile threats to the homeland.

b. CDRUSNORTHCOM conducts military operations within the United States Northern Command (USNORTHCOM) AOR, utilizing forces to deter, detect, or defeat an incursion into US sovereign territory. NORAD is a bi-national command composed of Canadian and US forces. NORAD's primary missions are aerospace warning, aerospace control, and maritime warning for North America. Because of the unique structure of the two commands, each tasked with providing for the defense of Canada and the US, NORAD and USNORTHCOM do not strictly adhere to the counterair framework in the conduct of homeland AMD operations. However, NORAD and USNORTHCOM appropriately synchronize their activities to ensure an effective DCA strategy for the USNORTHCOM AOR. USNORTHCOM is assigned the BMD mission in the AOR, while NORAD conducts AD of the North America area of operations (aerospace warning, aerospace control, and maritime warning) through bi-national, integrated air operations with Canadian forces under the NORAD Agreement to protect the homeland from an air threat. Additionally, CDRUSPACOM is responsible for similar HD missions in the United States Pacific Command (USPACOM) AOR.

c. Operation NOBLE EAGLE (ONE) covers aerospace warning and control for defense of the US and Canada. NORAD executes ONE by employing systems and C2 necessary to protect vital assets. The NCR-IADS [National Capital Region-Integrated Air Defense System] provides in-place assets in a quick reaction posture to protect key locations in the National Capital Region from air attacks and augments the ONE fighter defenses.

d. Offensive operations to protect the homeland require CDRUSNORTHCOM to closely coordinate with other CCDRs in planning when and how to negate a threat to the homeland. If a threat to the homeland requires offensive operations, Commander, United States Strategic Command (CDRUSSTRATCOM), may provide global strike capabilities in coordination with a supported/supporting CCDR, as directed by the President or the Secretary of Defense (SecDef).

e. United States Strategic Command (USSTRATCOM) provides missile warning information to GCCs/allies and missile attack assessment to CCMDs when required.

For additional information, see JP 3-27, Homeland Defense.

5. Global Operations

a. Global operations are characterized by activities that cross GCCs' AOR boundaries and require coordination or integration among those affected CCMDs and allies. Global operations require a collaborative, adaptive planning process that provides the ability to coordinate and synchronize theater and global plans. Planners must balance competing requirements for high-demand/low-density resources.

b. Global operations to counter air and missile threats include global MD and global strike.

(1) **Global MD**

(a) Global MD encompasses MD operations, activities, or actions that affect more than one GCC and require synchronization among the affected commands to coordinate effective allocation, deployment, and employment of capabilities necessary to deter and prevent attacks, destroy enemy missiles, or nullify or reduce the effectiveness of an attack. Per the UCP, CDRUSSTRATCOM synchronizes planning for global MD in coordination with other CCMDs, the Services, and as directed, appropriate United States Government (USG) departments and agencies.

(b) CDRUSSTRATCOM synchronizes the overall collaborative MD planning process, utilizing planning synchronization forums and multi-AOR plans assessments. Global MD requires synchronization across global activities to include operations, intelligence, global force management (GFM), planning, training, network monitoring, asset management, allied integration, testing, and acceptance.

(c) Global MD is predicated on centralized planning and decentralized execution. While GCCs plan all assigned missions within their respective AORs, including regional MD and support to HD, global MD utilizes a collaborative planning process that

provides GCCs with the ability to coordinate cross-AOR MD in multiple theaters. During execution, MD forces and resources are under the control of the JFC to whom they are assigned or attached. Tasking and engagement authority is delegated to the lowest practical level consistent with the rules of engagement (ROE), the defended asset list (DAL), the AADP, and the authority of the JFC.

(d) As the synchronizer for global MD planning, CDRUSSTRATCOM executes several core responsibilities:

1. The Missile Defense Global Synchronization Board is chartered to resolve issues related to global MD plans, operational planning guidance or policy, plans assessments, and GFM.

2. Global synchronization of MD plans maintains situational awareness; performs globally focused, cross-AOR analysis; and develops inputs, recommendations, and assessments.

3. MD GFM is responsible for identifying and recommending globally optimized sourcing solutions for BMD capabilities as part of the GFM process in support of SecDef.

Refer to Chapter V, "Defensive Planning and Operations," paragraph 12, "Global Missile Defense," for additional detail on global MD synchronization.

(2) **Global Strike**

(a) Global strike is the capability to rapidly plan and deliver extended-range attacks, limited in duration and scope, to create precision effects against enemy assets in support of national and theater commander objectives. Global strike missions employ all means to produce both lethal and nonlethal effects against a wide variety of targets. Specific to countering enemy air and missile threats, global strike missions can include actions taken against air and missile target sets, with consideration given to JFC's required execution timeline, target characterization (location, hardness, size, mobility, etc.), and weapon/target compatibility.

(b) The UCP assigns CDRUSSTRATCOM the responsibility for global strike. CDRUSTRATCOM plans global strike in full partnership with affected CCDRs. The Chairman of the Joint Chiefs of Staff (CJCS) or SecDef determines supporting and supported command relationships for execution. Additionally, USSTRATCOM is tasked to provide support, in its assigned mission areas, to other CCMDs. In such circumstances, USSTRATCOM acts in a supporting role for planning and execution.

6. Integrated Air and Missile Defense

a. IAMD is the integration of capabilities and overlapping operations to defend the homeland and US national interests, protect the joint force, and enable freedom of action by negating an enemy's ability to create adverse effects from their air and missile capabilities. IAMD incorporates offensive and defensive measures to create a comprehensive joint and combined force capable of preventing an enemy from effectively employing its offensive air

and missile weapons. IAMD is designed to deter, and failing that, to prevent an enemy from effectively employing air and missile assets.

b. At the theater level, IAMD consists of DCA supported by OCA attack operations. Beyond the theater level, IAMD emphasizes the integration of these counterair operations with global MD, HD, and global strike. IAMD also includes C-RAM at the tactical level. The following elaborates the key operational elements integrated under IAMD.

(1) **DCA and OCA Attack Operations.** Within a theater, IAMD is primarily focused on DCA. IAMD is also directly supported by OCA attack operations missions providing **protection** for US and Allied forces/assets (e.g., attacks against BMs and their associated infrastructure). In addition, OCA attack operations also include missions contributing to **air superiority** (e.g., attacks against enemy fighter airfields) which are outside of IAMD. While OCA attack operations against IAMD-related targets may require the support provided by SEAD, fighter escort, and fighter sweep, these elements of OCA are considered outside of IAMD.

(2) **HD.** AMD for the homeland, while having similarities with other theaters, has many unique aspects. As the highest priority task, HD must be supported by all GCC AMD forces capable of contributing.

(3) **Global MD.** IAMD uses the global MD planning construct to balance the MD needs at the CCDR level with broader global MD needs including HD. Global MD focuses on a collaborative planning process among CCDRs orchestrated/synchronized by CDRUSSTRATCOM.

(4) **Global Strike.** IAMD includes integration of global strike operations with OCA attack operations and DCA needs and capabilities of CCDRs.

(5) **C-RAM**. C-RAM is a tactical mission that provides detection, warning, C2, and intercept of RAM in flight and engagement of enemy sources of IDF. C-RAM is generally the responsibility of the ground commander to plan and execute.

7. The Relationship Between Counterair and Integrated Air and Missile Defense

Figure I-2 depicts the relationship between counterair as the foundational framework at the theater level and IAMD as the integrating approach between counterair and global MD, HD, global strike, and C-RAM. SEAD, fighter sweep, and fighter escort are shown as counterair missions outside of IAMD.

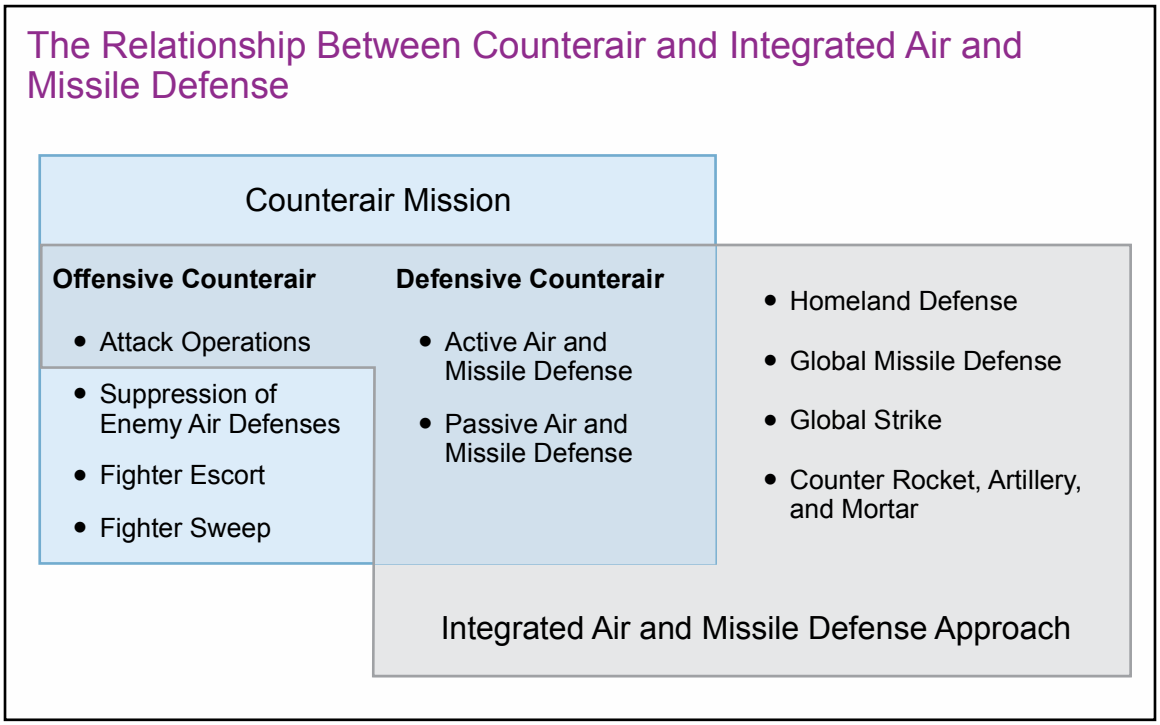

Figure I-2. The Relationship Between Counterair and Integrated Air and Missile Defense

CHAPTER II
COMMAND AND CONTROL

"Our superiority in precision munitions, stealth, mobility and command, control, communications, and computers proved to be decisive force multipliers."

General H. Norman Schwarzkopf
Commander, US Central Command
Operation DESERT STORM 1991

1. General

The growing capabilities of air and missile threats (speed, range, accuracy, stealth, lethality) and their proliferation require joint forces to be responsive, flexible, and integrated to effectively counter these threats. The manner in which a JFC organizes forces directly affects their responsiveness and versatility. Based on mission analysis, the JFC tailors forces to specific tasks which enable effective spans of control, responsiveness, tactical flexibility, and protection. Effectively and efficiently countering air and missile threats involves all components of the joint force, clear command relationships, and properly assigned responsibilities.

SECTION A. COMMAND RELATIONSHIPS AND RESPONSIBILITIES

2. Command Relationships

Command relationships specify the interrelated responsibilities between commanders, as well as the operational authority exercised by commanders in the chain of command; defined further as combatant command (command authority), operational control (OPCON), tactical control (TACON), or support. SecDef designates command relationships between CCDRs for planning and execution of operations and campaigns. JFCs establish command relationships between subordinate commanders for missions and operations when one force is required to aid, protect, augment, support, or sustain another force.

3. Support Relationships

SecDef designates support relationships between CCDRs for planning and execution of operations and campaigns. JFCs typically establish support relationships between subordinate commanders for missions and operations when one force is required to aid, protect, complement, or sustain another force. When countering air and missile threats, support relationships are particularly useful for forces made available for tasking and those shared for conducting other joint operations. An establishing directive is normally issued to specify the purpose of the support relationship, and unless modified by that directive, the supported commander will have the authority to exercise general direction of the supporting effort that includes the designation and prioritization of targets or objectives, timing and duration of the supporting action, and other instructions necessary for coordination and efficiency. The supporting commander normally determines the forces, tactics, methods, procedures, and communications to be employed in providing this support.

See JP 1, Doctrine for the Armed Forces of the United States*, for details normally contained in the establishing directive.*

a. **Supported CCDR.** The supported CCDR is designated by SecDef in the appropriate execute order (EXORD) or establishing directive. The supported CCDR retains direct responsibility for the campaign or operation as a JFC or may designate a subordinate JFC or component commander to plan and execute a campaign or operation. Unless otherwise directed by the President/SecDef, the GCCs of targeted AORs are the supported commanders for global MD operations within their AOR.

b. **Supporting CCDRs.** In the same EXORD that designates the supported CCDR, SecDef designates the supporting CCDRs based on their capabilities. Two CCDRs who are typically designated as supporting CCDRs are Commander, US Transportation Command, who supports force deployments and movements, and CDRUSSTRATCOM, who synchronizes planning and coordinates support for global MD operations to minimize operational seams across AOR boundaries, provides missile launch warnings and space and strategic forces/capabilities, and federated intelligence support between CCDRs, as described in JP 2-01, *Joint and National Intelligence Support to Military Operations*.

c. A supported CCDR may concurrently be tasked with supporting relationships to multiple CCDRs who may be under direct threat or who have a HD responsibility.

Refer to JP 1, Doctrine for the Armed Forces of the United States*, for further information on command relationships and authorities.*

4. Joint Force Commander

a. The JFC organizes forces, establishes command relationships, assigns responsibilities, and promulgates necessary coordinating instructions. The organization should be sufficiently flexible to meet the planned phases of operations and any subsequent development that may require a change in plans. Primary responsibilities of the JFC as they apply to counterair include the following:

(1) Develop and maintain a C2 system to unify the employment of subordinate forces in carrying out assigned counterair missions.

(2) Develop and produce a joint plan or an operation order (OPORD) that includes AMD guidance.

(3) Establish appropriate command relationships with authorities for the component commanders.

(4) Define and assign operational areas within which component forces will operate.

(5) Assign tasks, functions, and responsibilities to, and direct coordination among, the subordinate commands to ensure unity of effort in accomplishing joint counterair missions.

(a) Designate an AADC and approve an AADP developed by the AADC in conjunction with the joint force components. The AADP may also be synchronized with other BMD planning by direction of the supported CCDR and in coordination with USSTRATCOM.

(b) Designate an ACA and approve the airspace control plan (ACP) developed by the ACA in coordination with the joint force components.

(c) Establish a theater air and missile warning architecture to share warnings with joint force components, allies, interagency entities, and HN agencies, as required by agreements.

(6) Establish, coordinate, and disseminate ROE to all subordinate commanders.

b. In operations of limited scope or duration, the JFC may organize and conduct counterair operations using the joint force staff (e.g., the operations directorate of a joint staff [J-3]). If the JFC designates a JFACC, the JFACC may also be designated as the supported commander for strategic attack, air interdiction, and airborne intelligence collection (among other missions). As a joint mission, counterair is conducted by all components with the necessary capabilities, with the JFC/JFACC ensuring unity of command (or unity of effort), centralized planning and direction, and decentralized execution. The JFC determines the most appropriate command relationships for the component forces/capabilities made available for counterair. Regardless of the command relationship, all counterair forces are subject to the ROE, airspace control, weapons control measures, and fire control orders established by the JFACC, AADC, and/or ACA, as approved by the JFC. Additionally, the AADC will be granted the necessary command authority to deconflict and control engagements and to exercise real-time battle management.

c. When the JFC organizes the joint force, in addition to a JFACC, the JFC also normally designates an AADC (for DCA) and an ACA (for joint airspace control). Normally, the JFC designates the JFACC as the AADC and ACA, because the three functions are so integral to one another. Those functions are described later in this chapter.

d. If the situation dictates, the JFC may designate an AADC and/or ACA separate from the JFACC. In that case, the JFC must clearly establish the command relationships of the JFACC to the AADC and the ACA. The function of the ACA is integral to both the JFACC and AADC, so either may be designated the ACA, if not designated separately by the JFC. When the JFACC, AADC, and ACA are not the same individual, close coordination among all is essential for unity of effort, synchronization/deconfliction of operations, and prevention of friendly fire incidents.

e. The JFC's staff assists in the decision-making process. The staff's sole function is command support and its authority is delegated to it by the JFC. The staff plans, monitors, advises, and coordinates the previously listed JFC responsibilities. The JFC has the authority and latitude to organize the staff and assign responsibilities to ensure unity of effort and accomplishment of assigned missions (to include counterair operations). The composition of the staff normally reflects the composition of the joint force to ensure those responsible for

employing joint forces have thorough knowledge of total force capabilities, needs, and limitations. Normally, each staff division is responsible for a specific area and is required to coordinate its actions, planning, and progress with other concerned divisions and agencies within the command. The primary staff divisions and their responsibilities are discussed in detail in JP 3-33, *Joint Task Force Headquarters*.

5. Component Commanders

a. **Service Components.** The Service component commanders provide the JFACC forces and capabilities per the apportionment guidance by the JFC. They pass warnings of air and missile attacks to their forces and establish the means of C2 for the decentralized execution of counterair operations. Some of the Service components are capable of establishing regional/sector AD command posts and providing the regional air defense commanders (RADCs)/sector air defense commanders (SADCs). The following are elements of the Service components that support counterair:

(1) **Army.** The commander, Army air and missile defense command (AAMDC), is the Army forces (ARFOR) operational lead for AMD who ensures the ARFOR contribution is properly planned, coordinated, integrated, and synchronized. The commander, AAMDC, is normally designated the theater Army air and missile defense coordinator (TAAMDCOORD) for the theater Army commander or the joint force land component commander (JFLCC), if one is established. As approved by the JFC, the AADC may designate the commander, AAMDC, as a deputy area air defense commander (DAADC) for AMD in support of the AADC for DCA operations. The AAMDC is responsible for balancing the Army counterair assets/capabilities between the Army and the joint force land component (if established) maneuver units and the theater-level requirements established in the JFC-approved DAL and the AADP. The AAMDC ensures Army theater AMD operations are internally coordinated and properly integrated with the joint force and MNFs. The Army provides C2, sensors, and weapon systems for counterair, but does not provide the capability for regional/sector AD command posts within the land component area of operations (AO). The Army has ground-based AMD units effective against theater missiles and aircraft, but no fixed-wing AD aircraft. Combat aviation brigades may also conduct attacks against fixed AD sites, mobile theater BM launchers, and other threat AD assets, but these operations often require detailed joint and combined arms planning and synchronization. The ARFOR also has the Army Tactical Missile System (ATACMS), MLRS [multiple launch rocket system], GMLRS [Global Positioning System multiple launch rocket system], HIMARS [High Mobility Artillery Rocket System], and tube artillery for a short-range to medium-range offensive capability that could be used in support of OCA. Regional/sector AD commands are normally provided by C2 elements of other components such as Air Force control and reporting centers (CRCs), Marine Corps tactical air operations centers (TAOCs), and Navy C2 and aviation-equipped ships.

(2) **Navy.** Navy forces (NAVFOR) can provide OCA, DCA, and C2 to the joint counterair effort. The Navy component commander (NCC)/numbered fleet commander (NFC), who can be designated as the joint force maritime component commander (JFMCC), plans and executes joint maritime operations within an operational area. NAVFOR are supported by a maritime operations center (MOC), which serves as the central node to plan,

monitor, and direct activities in support of the maritime commander's operational-level mission.

(a) NAVFOR can provide aircraft to conduct OCA and DCA from the carrier air wings embarked on aircraft carriers or from carrier or expeditionary aircraft based ashore. The JFMCC normally makes aircraft sorties available to the JFACC/AADC for tasking. NAVFOR can also provide Tomahawk land attack missile strikes and naval surface fire support, as well as OCA contributions. DCA aircraft tasked to defend maritime assets remain under the TACON of the appropriate NAVFOR commander.

(b) Cruisers and destroyers provide area and point AMD and normally deploy as part of a carrier strike group. They may also be attached to amphibious ready groups or deploy independently. These multi-mission ships meet multiple JFC priorities. To balance competing operational requirements, the NCC retains OPCON of ships.

(c) An aircraft carrier, amphibious assault ship, cruiser, or destroyer could be made available to serve as a C2 platform for the RADC or SADC while remaining under commander, NAVFOR OPCON/TACON.

(d) For certain types of operations, such as an amphibious assault, the NCC may function as the JFACC and/or AADC.

(3) **Marine Corps.** The Marine Corps Service component commander to the CCDR receives Marine Corps forces (MARFOR) OPCON and provides them to functional commanders and JFCs. Marine Corps operating forces task organize as a Marine air-ground task force (MAGTF) that remains under the OPCON of the Marine Corps component commander. During joint operations, the MAGTF aviation combat element (ACE) will be in support of a MAGTF ground combat element (GCE) to accomplish the MAGTF mission. The MAGTF ACE is sized to support the GCE. The ACE has fixed- and rotary-wing assets and the means to control them. The MAGTF can support both OCA and DCA operations. The MAGTF commander's AD battle manager's authority is determined by the ACE commander. The MAGTF commander will make AD, long-range interdiction, and long-range reconnaissance sorties available to the JFC, for tasking through the JFACC/AADC. MAGTF air assets are made available for counterair through the air apportionment process; the MAGTF commander retains OPCON of organic air assets. The MAGTF air control assets, while supporting the ACE, are normally part of the joint force AMD system and if sized to the mission, can function as a sector AD command using its TAOC. Additionally, the MARFOR have organic, fixed-wing aircraft capable of OCA and DCA operations, limited SAM capability, and armed rotary-wing aircraft capable of limited OCA operations.

(4) **Air Force.** Counterair is a primary function of the Air Force forces (AFFOR) during joint operations. The AFFOR can make available sensor systems, C2 systems, and weapon systems and is capable of providing one or more RADCs/SADCs throughout the JOA, including within the land component AO. The Air Force operates a number of air operations centers (AOCs) worldwide. For joint operations, one of these with suitable joint augmentation is capable of being used as a joint air operations center (JAOC). Similarly for multinational operations, with the integration of joint and allied augmentation, these function

as a combined AOC. The commander, AFFOR, maintains centralized control of air operations through the Air Force AOC and the daily air tasking order (ATO). Decentralized execution of the ATO is normally accomplished by subordinate air commanders using elements of the theater air control system (TACS). The CRC may be used as the core element for an AD region/sector and can monitor/direct implementation of airspace control, ID, and weapons control procedures. For a large-scale, extended campaign, the commander, AFFOR, may provide appropriate elements of the TACS (i.e., CRCs, battle control centers [BCCs], and the Airborne Warning and Control System [AWACS]) in support of joint air operations and counterair operations. If required, CRCs may be provided to cover various operational areas within the JOA. AWACS may provide an initial TACS capability in the JOA until the CRCs are deployed and operational. The AWACS provides elevated sensors and radios for operational reach and, in operations of a limited scope or duration, can provide some of the functions of a CRC such as monitor/control airspace, ID, and weapons control procedures.

(5) The Services, with Department of Defense (DOD) agencies, support a complex and complementary array of sensor, weapon, C2, and battle management capabilities that are integrated to form the IADS, airspace control system (ACS), and theater air-ground system (TAGS).

For more information on TAGS, see ATP 3-52.2[FM 3-52.2]/MCRP 3-25F/NTTP 3-56.2/AFTTP 3-2.17, Multi-Service Tactics, Techniques, and Procedures for the Theater Air-Ground System.

For more information on an IADS, see ATP 3-01.15[FM] 3-01.15/Marine Corps Tactical Publication (MCTP) 10-10B [MCRP 3-25E]/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

b. **Functional Components.** Functional component commands serve to ease the burden on the theater and joint task force (JTF) staffs; free the JFC to focus more on strategic aspects of the campaign; and provide individual air, land, maritime, and SOF headquarters for coordination with the other components. The JFC assigns responsibilities to and establishes command relationships among the functional component commanders, to include planning, organizing, coordinating, and executing functional area joint operations based on the JFC's CONOPS. In addition to the JFACC, functional component commanders can include the JFLCC, JFMCC, and the joint force special operations component commander (JFSOCC).

(1) **JFLCC.** The JFC normally designates a JFLCC when the land forces comprise two or more component forces (e.g., ARFOR and MARFOR). The JFLCC will provide a better degree of centralized planning and direction for an expansive or complex land operation. The JFLCC, as a single commander for joint land operations, not only enhances synchronization of all land operations, but also provides forces/capabilities in direct support of the counterair mission. While ARFOR and MARFOR maneuver units have organic AMD assets, they have different abilities to contribute to counterair operations.

(a) The MAGTF normally makes aircraft sorties available for counterair tasking under TACON to the JFACC/AADC. The MAGTF commander's AD battle manager is a SADC whose authority is determined by the ACE commander. The MAGTF air control assets while supporting the ACE are normally part of the joint force IADS, and if sized to the mission, can function as a sector AD command.

(b) As discussed previously, the Army component provides an AAMDC that integrates the operational elements of Army active AMD, passive AMD, attack operations, C2 systems, and intelligence, and synchronizes the Army contributions to counterair operations. Normally, the AAMDC is under OPCON of the JFLCC and in direct support of the AADC. The AAMDC conducts split-based operations to provide the necessary support and deploys liaison teams to major theater C2 headquarters to ensure Army AMD assets are integrated and synchronized in joint operations. The commander, AAMDC, also commands all Army theater-level AMD forces.

Refer to JP 3-31, Command and Control for Joint Land Operations*, for more detailed information regarding the JFLCC and joint land operations.*

(2) **JFMCC.** The JFMCC is the single commander for joint maritime operations and typically has robust AMD capabilities that can be employed in support of joint counterair. Due to the interrelated nature of air, surface, and subsurface operations, if the JFC establishes a maritime AO, it may include a congruent regional or sector AD command covering the open ocean and littorals, for which the JFMCC should be granted sufficient authorities to conduct operations and defend fleet units, including the authority to engage missile platforms such as submarines, patrol boats, and aircraft, or coastal defense CMs. In the case of maritime AD regions, the JFMCC may recommend a subordinate maritime commander who possesses planning and C2 capabilities to the AADC for assignment as a RADC/SADC. The MOC's IAMD cell serves as the JFMCC's primary planning and execution coordination conduit with higher headquarters, other Service components (e.g., the AOC and AAMDC), subordinate forces, and outside support agencies for IAMD requirements. If a subordinate task force commander is designated as a RADC, the MOC's IAMD cell assists with coordination. The IAMD cell supports the development of the AADP and provides subordinate AMD planners a conduit for providing recommendations and adjustments to the plan.

(a) The JFMCC normally delegates TACON of AMD ships and assigns planning and command functions to the task force commander who has the preponderance of AMD ships. If activated and in place within the operational area, these functions may be assigned to a commander, task force integrated air and missile defense (CTF IAMD). CTF IAMD provides a standardized C2 layer between the NFC and subordinate maritime commanders focused on tactical-level missions.

(b) The US Navy employs the composite warfare commander (CWC) doctrine for tactical AMD. The CWC's air and missile defense commander (AMDC) coordinates with the IAMD cell/CTF IAMD to achieve integration of maritime forces in the execution of the AADP. Depending on the threat and available forces, the AMDC's BMD tasks may be

delegated to a separate BMD commander under the CWC. The MOC IAMD cell/CTF IAMD plans AMD for ships operating independently and not covered by a CWC structure.

Refer to JP 3-32, Command and Control for Joint Maritime Operations; *Navy Warfare Publication (NWP) 3-32,* Maritime Operations at the Operational Level of War; *NWP 3-56,* Composite Warfare: Maritime Operations at the Tactical Level of War; *and NTTP 3-32.1,* Maritime Operations Center, *for additional discussion of the CWC and Navy C2.*

(3) **JFSOCC.** The JFSOCC may be the commander, theater special operations command, a subordinate unified command under a GCC or under a JFC subordinate to the GCC. The JFSOCC may be a designated commander, joint special operations task force (CDRJSOTF). The JFSOCC/CDRJSOTF can provide OCA support through employment of some of their core activities, such as direct action, special reconnaissance, unconventional warfare, and information-related activities, normally in enemy territory. Those core activities represent the collective capabilities of all SOF rather than those of any one unit. Normally, SOF have no capability to support DCA outside of self-defense using small arms or man-portable air defense systems (MANPADSs). The JFSOCC normally provides a special operations liaison element (SOLE) to the JFACC at the JAOC and a special operations C2 element to the JFLCC, and to the JFMCC, if necessary. The SOLE, in close coordination with all JFSOCC components, coordinates and deconflicts SOF surface and air operations with the air component, including coordination for shared assets and prevention of friendly fire.

For further details concerning the JFSOCC, refer to JP 3-05, Special Operations.

6. Joint Force Air Component Commander

a. The JFC will typically designate responsibility for joint air operations to a JFACC. Normally, the JFACC is the Service component commander having the preponderance of air assets and the capability to plan, task, and control joint air operations. The need for a JFACC is based on the JFC's overall mission, CONOPS, missions and tasks assigned to subordinate commanders, forces available, duration and nature of joint air operations desired, and the degree of control required for joint air operations. Although not a joint air operation, but a joint operation, counterair is normally an assigned responsibility of the JFACC. **The functions of the JFACC, AADC, and ACA must be integrated to ensure joint air operations, OCA, DCA, and airspace control are fully integrated and synchronized.**

b. The JFACC generally uses centralized planning and direction with decentralized execution for counterair operations. This parallels the JFACC using centralized control with decentralized execution for joint air operations. These are not to be confused with the surface AMD control modes of centralized control, when higher echelon AMD units direct target assignments over their fire units, and the normal mode of decentralized control, when the higher echelon monitors fire unit actions, making direct target assignments to units only when necessary to ensure proper fire distribution or to prevent engagement of friendly aircraft.

c. The dual-designated Service component commander/JFACC will exercise OPCON over their own Service forces as the Service component commander and TACON over, or direct support from, other Services' forces made available for tasking. For example, air sorties made available for tasking are normally provided under TACON while surface-based AMD forces are provided in direct support with mission-type orders. Those other component forces typically remain under the OPCON of their Service/functional component commanders.

d. The JFACC normally plans, coordinates, allocates, and tasks joint air operations based on the JFC's CONOPS and air apportionment decision. **Other responsibilities of the JFACC relating to joint counterair operations include the following:**

(1) Develop, coordinate, and integrate joint counterair planning with operations of other components for JFC approval.

(2) Make an air apportionment recommendation to the JFC, after consulting with other components and supporting commanders, which includes counterair, strategic attack, air interdiction, ISR, and CAS.

(3) Provide centralized direction for allocating and tasking joint counterair capabilities and forces made available by the JFC.

(4) Perform the duties of the AADC when directed by the JFC.

(5) Perform the duties of the ACA when directed by the JFC.

(6) Perform the duties of the space coordinating authority (SCA) when directed by the JFC.

(7) When approved by the GCC and directed by the JFC, coordinate cross-AOR planning and operations with the JFACC/JFCs of supported and supporting CCMDs.

e. The JFACC plans, directs, and executes counterair operations throughout the theater/JOA in accordance with JFC guidance and priorities, and therefore determines the priority, timing, and effects of counterair fires throughout the theater/JOA. When the JFC designates land/maritime force commanders, they are the supported commanders within their designated AOs, and they synchronize maneuver, fires, and interdiction within their AOs, to include prioritizing targets, effects, and timing of fires. The JFACC has the latitude to plan and execute JFC-prioritized missions within a land or maritime AO in coordination with that land or maritime force commander.

(1) For theater-level IAMD, OCA attack operations are commanded by the JFACC and DCA is commanded by the AADC. The JFACC is responsible for integration between the offensive and defensive counterair components of IAMD.

(2) Although the JFACC normally has the latitude to plan and execute high-priority counterair operations and to attack targets within the land and maritime AOs, the JFACC must coordinate specific counterair operations with those component commanders to avoid

adverse effects and friendly fire. If counterair operations would have adverse effects within a component's AO, then the JFACC must adjust the plan, resolve the issue with that component commander, or consult with the JFC for resolution.

(3) The JFC may designate and prioritize certain time-sensitive targets (TSTs) that require immediate action whenever and wherever those TSTs are found. In doing so, the JFC has assessed and approved the higher risk for that priority target. **The JFACC, JFLCC, JFMCC, and JFSOCC must plan, coordinate, and rehearse how the JFACC will engage TSTs within the land and maritime AOs and the joint special operations areas.**

f. A JAOC normally functions as the JFACC's principal operations center. It links with national and theater sensors, intelligence, communications, and component operations centers. The Service component commanders dual-designated as JFACCs will normally use their organic AOCs to form the cores of their JAOCs. Personnel from other component commands will normally augment the JAOC. The effectiveness of the JAOC also rests on the expertise of component liaisons such as the Army battlefield coordination detachment (BCD), naval and amphibious liaison element (NALE), Marine liaison element (MARLE), the SOLE, and the AAMDC element. These liaison elements enhance coordination between their component commanders and the JFACC. The JFACC may establish one or more joint air component coordination elements (JACCEs) with other commanders' headquarters to better integrate joint air operations with their operations. When established, **the JACCE is a component-level liaison that serves as the direct representative of the JFACC.** The component operations centers and liaison elements facilitate the planning, coordination, integration, and deconfliction of all joint counterair operations with other component operations.

g. The JFACC establishes a component joint data networks operations officer equivalent (CJE), as does each of the joint force components. The CJEs support the JFC's joint data network operations officer (JDNO) who is responsible for the common tactical picture (CTP). The JDNO may be located with the JFC or JFACC. The JFC typically designates the JFACC as the designated component commander for the joint multi-tactical data link network (MTN).

Refer to JP 3-30, Command and Control of Joint Air Operations*, for more detailed information regarding the JFACC, JAOC, and JACCE, and joint air operations.*

Refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*, for additional details.*

7. Area Air Defense Commander

a. The JFC designates an AADC with the authority to plan, coordinate, and integrate overall joint force DCA operations. The AADC is normally the component commander with the preponderance of AMD capability and the C2 and intelligence capability to plan, coordinate, and execute defensive operations, including real-time battle management.

b. An IADS is normally established by the AADC for DCA with the JAOC leading its operation. The IADS is a robust integration of the Services' AMD capabilities and comprises sensors, weapons, C2 systems, intelligence systems, and personnel. The IADS allows the AADC to optimize mutual support leveraging the strengths of the Services' capabilities while covering for their limitations. In the interest of decentralized execution, the AADC and RADCs/SADCs should be granted the necessary authorities to synchronize/deconflict and control engagements and to exercise battle management. Those authorities may include ID, commit, emissions control, and engagement, all of which are discussed in Chapter III, "Planning," paragraph 13, "Identification, Commit, and Engagement Authorities."

c. The JFC will define the command relationships between the AADC and other joint force and Service component commanders. Components will provide representatives, as appropriate, to the AADC's headquarters to provide both specific weapon systems expertise and broader mission expertise. If the JFACC is the AADC, or they are collocated, those representatives are normally within the same liaison elements provided to the JAOC (BCD, AAMDC, NALE, MARLE, and SOLE). **If the AADC is not located at the JAOC, then appropriate liaison elements will be required from the Service/functional components.**

d. With the support of the component commanders, **the AADC develops, integrates, and distributes a JFC-approved joint AADP.** A critical feature of a joint, integrated plan is a common operational picture (COP) (i.e., a fused and correlated air, ground, and maritime picture) available in all supporting C2 facilities.

(1) The plan should also contain detailed weapons control and engagement procedures for all DCA weapons systems and forces integral to DCA operations.

(2) The plan should be closely integrated with the ACP through the ACA.

(3) The AADP should include information-related capability (IRC) measures and actions supporting DCA operations.

e. Primary responsibilities of the AADC include the following:

(1) Develop, integrate, and distribute a JFC-approved joint AADP in coordination with Service and functional components.

(2) Develop and execute, in coordination with the intelligence directorate of a joint staff (J-2), J-3, communications system directorate of a joint staff, and joint force components, a detailed plan to disseminate timely air and missile warning and cueing information to components, forces, allies, coalition partners, and civil authorities, as appropriate. Launch warnings, attack assessments, and other aspects of MD should be coordinated through the supported GCC or directly with USSTRATCOM, if necessary, during BMD planning.

(3) Develop and implement, in coordination with the component commanders and with JFC approval, ID and CID procedures and authorities, and engagement procedures appropriate for counterair.

(4) Establish timely and accurate track reporting procedures among participating units to provide a CTP.

(5) Perform the duties of the ACA when directed by the JFC.

(6) For complex operations, the JFC may approve establishment of AD regions/sectors and designation of RADCs/SADCs, as appropriate, to enhance decentralized execution of DCA operations.

(7) Establish appropriate joint, fighter, and missile engagement zones in coordination with the RADCs/SADCs and the ACA.

(8) Appoint DAADCs as required, to advise on how to integrate and synchronize their Service component DCA capabilities/assets for complex DCA plans and operations.

(9) Ensure all support assets, including surface-based and space-based early warning systems, are fully coordinated to support DCA operations.

(10) Make DCA recommendations to the JFC/JFACC after consultation with DCA representatives from the joint force components.

(11) Make OCA attack operations recommendations to the JFC/JFACC to help counter the air and missile threat. The AADC should prioritize those desired effects to be created to support achievement of objectives through OCA.

(12) As approved by the JFC, coordinate with supported/supporting commands for cross-AOR operations (e.g., cross-AOR BMD).

8. Deputy Area Air Defense Commander

When a significant portion of the DCA capability is contributed by a component other than that of the AADC, a senior officer from that component may be designated by the JFC or AADC as a DAADC. DAADC responsibilities include assisting in AADP development; integrating respective component and multinational AMD into DCA operations; and advising on ROE, coordination measures, weapons control measures, and AD warnings. The commander, AAMDC, is normally designated as a DAADC and advises the AADC on the best distribution of the Army AMD capabilities between the requirements for the theater-level DAL and maneuver forces of the commander, ARFOR/JFLCC. As a DAADC, the commander, AAMDC, will deploy personnel and equipment to the JAOC.

Note: The Army BCD normally deployed to the JAOC is only a liaison element. Although the BCD has an AD section, responsibility to integrate the ARFOR AMD resides with the senior air defense artillery (ADA) commander, normally the commander, AAMDC.

9. Regional and Sector Air Defense Commanders

During complex operations/campaigns conducted in a large JOA/theater of operations, the AADC may recommend, and the JFC may approve, the division of the operational area

into separate AD regions, each with a RADC who could be delegated responsibilities and decision-making authority for DCA operations within the region. The AADC and RADC, as approved by the JFC, may choose to further divide regions into sectors, each with a SADC with appropriate authority for their responsibilities. Generally, the regions/sectors are based on geographic size and terrestrial features. When RADCs/SADCs are employed in support of BMD operations, regional/sector boundaries are normally assigned on the basis of predicted BM impact points. The open ocean and littorals are normally part of a maritime AO/region and the RADC/SADC may be afloat, so its complete integration with the bordering land-based RADC/SADC and the AADC is essential to prevent a seam in the IADS. **The core of a RADC/SADC is a Service component air control/AD organization with the necessary situational awareness and communications links up to the AADC/JFACC/JFC, down to the tactical units' operation centers, and laterally to other RADCs/SADCs.** Tactical data links (TDLs) and joint data networks (JDNs) facilitate sharing the CTP between Service systems and RADCs/SADCs. The COP resides at higher echelons and normally includes TDL/JDN CTP data within the Global Command and Control System environment.

a. The maritime component normally operates with a Navy AMDC. Littoral areas may also be covered by a Navy tactical air control center (Navy TACC) or Marine TAOC. Over land, there may be numerous RADCs/SADCs, normally operated by the AFFOR or the MARFOR. The role of the Army does not require a capability to operate a RADC/SADC.

b. The AADC may also delegate certain planning functions to a RADC/SADC concerning the deployment of air and surface AMD assets. In all cases, the AADC should establish clear guidance concerning the responsibilities and authorities delegated to the RADC/SADC.

c. Each RADC/SADC with a surface-based AMD requirement/capability must have that expertise on staff and the requisite C2 links. For a Navy/maritime component, the integration of air-to-air and surface-to-air capabilities is organic to established fleet AMD. The MAGTF also has an integrated organic AMD capability. The Air Force must rely on Army augmentation/liaison for surface-to-air expertise. A Navy or Marine Corps RADC/SADC should have that Army expertise as a liaison if they rely on an Army AMD capability within their region/sector. Regions with allied SAM systems should also have appropriate representatives at key command nodes.

d. **Fire Control and Coordination**

(1) The AADC/RADC/SADC should assign a fire control/coordination watch officer to establish C2 of the AMD firing units. The position can be manned by component liaison officers, upper tier coordination officers, air defense artillery fire control officers (ADAFCOs), and combinations of the aforementioned depending on the mission defense design (to include separating upper tier and lower tier coordination when appropriate, i.e., no overlapping coverage). The fire control/coordination watch officer is responsible for passing updated firing orders and guidance from the AADC/RADC/SADC to the firing units and coordination and deconfliction of BM engagements, and advising the AADC/RADC/SADC on potential tactical impacts of weapons systems degradations and changes in firing orders,

ROE, and defense design. The fire control/coordination watch officer should be capable of continuous (24-hour) operations with the AADC/RADC/SADC, and is normally placed under the direct control of the senior AD officer, at the JAOC. Army ADAFCO elements should be part of/liaison to any Service component AMD operations centers that may have control of or support from Army AMD assets.

(2) **Army ADAFCO.** The ADAFCO is the single point of contact between Army land-based AMD fire direction centers and the joint/Army controlling authority. An ADAFCO is required in any area/region/sector AD command in which an Army AMD capability is employed. The ADAFCO is responsible for coordinating Army AMD for designated assets/areas on the DAL in that area/region/sector and for coordinating and monitoring the tracking and engagement activities of individual Army ADA fire units. The ADAFCO is the Army AMD engagement expert for the AADC/RADC/SADC on what course of action (COA) Army ADA units will follow and what limitations ROE can have on autonomous Army ADA units. ADAFCO elements should be part of/liaison to any Service component AMD operations center that may have control of or support from Army AMD assets. The ADAFCO element should be capable of continuous (24-hour) operations with the AADC/RADC/SADC and is normally placed under the direct control of the senior AD officer, senior weapons director, or mission crew commander.

(a) **AAMDC ADAFCO.** The AAMDC ADAFCO will typically be located with the AADC/JFACC and the senior AD officer at the JAOC, and will coordinate and deconflict upper-tier (i.e., exo-atmospheric) BM engagements. Currently, upper-tier engagements of BMs may be executed by the Aegis weapon system and the Terminal High Altitude Area Defense (THAAD) system, and coordination/deconfliction will normally be accomplished with appropriate tactics, techniques, and procedures. The AAMDC ADAFCO maintains communications with the brigade (BDE) ADAFCOs at the various regional/sector AD commands to share situational awareness. The AAMDC ADAFCO requires reliable voice and data communications with the BMD-capable ship, the THAAD battery tactical control officer, and the BDE ADAFCOs. The AAMDC ADAFCO requires a joint air picture shared with the senior AD officer.

(b) **BDE ADAFCO**. The Army BDE ADAFCO is responsible for lower-tier (i.e., endo-atmospheric) engagements within a particular region or sector. Lower-tier engagements include terminal phase engagements of BMs, ASMs, and air-breathing threats (aircraft and CM). The BDE ADAFCOs are normally located with the CRC/TAOC, and specifically with their mission crew commanders or senior weapons directors. The BDE ADAFCOs are the Army link between Patriot units and the joint controlling agency (e.g., CRC/TAOC). The BDE ADAFCO requires voice and data communications with the tactical directors at the battalion's information coordination central and a joint air picture feed from the RADC/SADC or the commander with engagement authority. BDE ADAFCOs are required to collocate with a RADC/SADC and are usually located with a CRC; on an aircraft carrier, amphibious assault ship, cruiser, or destroyer; at a TAOC; or, in very specific circumstances, an AWACS. To ensure error-free clearing of fires, the ADAFCO should be provided a dedicated position with display of the CTP and supporting voice communications.

For additional information on ADAFCOs, refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

10. Airspace Control Authority

a. The JFC designates an ACA to establish and operate the ACS. The ACA also develops policies and procedures for airspace control that are incorporated into an ACP and promulgated throughout the theater/JOA. A key responsibility of the ACA is to provide the flexibility needed within the ACS to meet contingency situations that necessitate rapid employment of forces.

b. The ACA coordinates use of airspace through the ACP, including integration with the HN ACS, and synchronizes/deconflicts all user requirements using the airspace control order (ACO). The ACA must be able to rapidly implement coordination measures in the dynamic counterair environment to enhance freedom of action of components while preventing friendly fire. The ACP is implemented by the ACO, and all component forces that affect joint air operations are subject to the ACO. However, this control of airspace by the ACA does not imply any type of command authority (OPCON or TACON) over any air asset.

c. The ACA responsibilities for counterair operations include, but are not limited to:

(1) Link the ACP to the AADP when designating volumes of airspace.

(2) Develop coordination measures that support and enhance operations.

(3) Provide a flexible ACP that can adapt to changing requirements of the tactical situation.

Refer to JP 3-52, Joint Airspace Control*, for more details concerning the ACA.*

11. Global Command Relationships Considerations

The primary strategic planning documents, *Guidance for Employment of the Force* and *Joint Strategic Capabilities Plan,* discuss synchronization of campaign plans across AOR and functional boundaries. GCCs are supported commanders for assigned missions in their AORs, and they anticipate the possibility for operations across AOR boundaries based on threats and capabilities. They must plan accordingly and coordinate with other supported and supporting CCDRs. SecDef guidance to affected CCDRs is useful to add specificity to planning and coordination mechanisms. This may be in the form of an establishing directive or EXORD.

a. When establishing command relationships and C2 for global MD, the following should be considered:

(1) **Span of Control.** Span of control is based on factors such as the number of subordinates/components, number of activities, range of weapon systems, force capabilities, the size and complexity of the operational area, and the method used to control operations

(e.g., centralized or decentralized execution). **Coordination authority between GCCs should enable coordination at component and tactical levels supporting unity of effort for global MD and global strike.**

(2) **Simplicity.** Simplicity is achieved through an unambiguous chain of command, well-defined command relationships, and clear delineation of responsibilities and authorities. **For global MD,** which typically must be executed in a matter of minutes, **simplicity is essential** and enables fully planned and rehearsed actions before execution is actually required.

(3) **Unit Integrity.** Component forces should remain organized as designed and in the manner accustomed through training, but global operations may necessitate unique support relationships, including units supporting forces in other theaters.

(4) **Interoperability.** C2 capabilities should be interoperable within the joint force headquarters, among component commands and other supporting commands, and between joint forces in support relationships. Collaborative planning at various levels is an essential aspect of interoperability among joint force components and supported/supporting commands.

(5) **Support Relationships.** SecDef establishes command relationships for global MD, global strike, and other cross-AOR operations. A significant concern for GCCs is not only ICBMs that can traverse entire AORs, but also other BMs, because they represent the most prevalent threats; based on geography, these can also pose cross-AOR threats. Unless specified otherwise by higher directive or previous agreement between CCDRs, a GCC in whose AOR a BM attack will impact is generally supported for BMD, while others are supporting (which could include a GCC's AOR from which the adversary originated the launch).

b. Existing plans and orders address a number of known cross-AOR threats. A primary concern involving cross-AOR fires/operations is the potential difficulty of prioritizing tactical actions of a supporting unit. Support relationships between GCCs can be clearly established, but responding to conflicting requirements or priorities can create an operational dilemma: How does the unit commander respond to multiple tasks? When may there be conflicting times and locations? This type of situation should be mitigated through training, exercises, and rehearsals.

c. Other essential considerations in global MD are the differences between GCCs' plans and procedures, command relationships, and battle management procedures. For example, **command relationships and the engagement procedures for homeland BMD are significantly different than those for BMD in other theaters.** These differences can be overcome through prior planning, training, and rehearsals among the supported and supporting commanders and tasked units. This applies to both the offensive and defensive aspects of a MD strategy.

d. CDRUSSTRATCOM coordinates the overall collaborative MD planning process for multi-AOR aspects of MD, utilizing planning synchronization forums and multi-AOR plans

assessments to aid in the synchronization of planning in support of GCCs worldwide, including the homeland.

SECTION B. COMMAND RELATIONSHIPS

12. General

Most joint operations are now conducted within a multinational context (i.e., an alliance or coalition). Each MNF operation is unique, and the international situation, along with the perspectives, motives, and values of each MNF member, may vary. The JFC (who may be the multinational force commander [MNFC]) must evaluate key considerations and differences involved in planning, coordinating, and conducting counterair operations in a multinational environment. A major characteristic of operating in the multinational environment is that consensus through compromise is often essential to success. Within designated command authorities and in close coordination with the civilian leadership, the MNFC may have responsibilities to both national and foreign leaders and must be prepared to negotiate with MNF partners when planning and developing ROE, coordination measures, weapon control measures, prioritized critical asset lists, and other appropriate procedures and processes such as CID.

13. Multinational Command Relationships

a. Participation with and defending our allies is a critical part of countering air and missile threats. The traditional command relationships used by US forces generally may not be possible with all MNF partners because of political constraints. Some MNF partners may accept US command authorities; others may not. In MNF operations, understanding the agreed upon command relationships and the related command authorities is key to developing the desired unity of effort for countering air and missile threats. This understanding is established during CCMD campaign planning with the potential to extend into multinational planning.

b. If command relationships and support requirements (e.g., security and logistics) are not already provided for in existing agreements, the JFC should request to have such agreements concluded (memorandums of agreements, technical arrangements, status-of-forces agreements, etc.) between US and MNF members conducting counterair operations. The authority to negotiate and conclude international agreements with MNF members is not an inherent aspect of the JFC's OPCON authority and must be exercised only by those entities specifically delegated authority to negotiate and/or conclude international agreements. The level to which authority to negotiate and conclude international agreements can be delegated is dependent on the particulars of each agreement. Delegations and authorities are discussed in DOD Directive 5530.3, *International Agreements*; Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 2300.01, *International Agreements*; and various Service-level guidance publications.

c. The JFC must be aware that many different interpretations of OPCON and TACON exist among MNF partners, and all must ensure complete understanding of the terms early during the planning of the operation. The JFACC/AADC may expect no more than TACON

over MNF counterair units/capabilities, and very likely, may have simple support relationships based on mission-type orders.

Refer to JP 3-16, Multinational Operations*, for more details on organizing alliance and coalition command structures and headquarters.*

14. Organization

a. No matter how the MNF is organized, the organizational structure and command relationships must be clearly understood by all commanders and supported by the C2 capability.

b. Some significant organizational considerations affecting counterair include force capabilities and disparities, information and equipment security, unit procedural and organizational differences, cultural differences, language barriers (including differing use of common terms), and interoperability of the C2 systems of the MNF components. See Figure II-1 for a listing of some principal factors affecting national military capabilities.

(1) Each nation normally establishes a national center or cell as a focal point to ensure effective support and control of its forces, to include counterair forces.

(2) National intelligence systems should be integrated to ensure responsiveness to counterair operational needs. Because sharing intelligence and warning information is vital to unity of effort, any issues related to the release of intelligence information and products to MNF partners must be resolved early during planning. At all levels, the senior US officer needs to be concerned with the issues of foreign disclosure guidance and intelligence sharing guidelines. They should strive to maximize releasability, consistent with policy and the need to know. Disclosure and releasability coordination must occur early in the planning process to ensure the commander's requirements and intent have been clearly stated and understood.

(3) Some nations are particularly sensitive to certain force protection measures (use of flares, security patrols by national forces other than their own, arming of force protection personnel, limiting access of airfield support personnel to aircraft, etc.). These issues should

Figure II-1. Factors Affecting the Military Capabilities of Nations

be coordinated ahead of time, and agreements must be continually updated as situations warrant.

(4) Some partners may be restricted to defensive roles only; the types of targets they are permitted to attack; and the level of risk they are willing to accept due to domestic politics, arms limitation agreements, or their capabilities.

(5) The AADC should ensure MNF ROE, engagement authorities, and procedures are consistent with the combined AADP and the MNF ability to identify friendly forces in order to prevent gaps and ensure joint air forces are not subject to an increased risk of friendly fire and MNF are not restricted from self-defense. When MNF ID and C2 capabilities are not consistent with joint capabilities, it may be necessary to implement additional coordination measures, procedural ID, and engagement control measures, or to limit MNF engagements to self-defense only. US liaison elements may be required at MNF AMD or air operations facilities to ensure an adequate capability for ID and engagement control exists.

c. All critical forces and geopolitical areas should receive adequate protection from air and missile threats. Some MNF partners are not uniformly capable of defending against air and missile threats and may require DCA assets from another theater or nation.

d. **The JFACC/AADC should consider using liaison officers to assess and/or assist MNF partners' counterair capabilities and to maintain span of control and keep forces connected at the tactical level.** Also, depending upon the makeup of the MNF, the need for interpreters should be considered.

See JP 3-0, Joint Operations*, and JP 3-16,* Multinational Operations*, for further detail concerning multinational operations.*

SECTION C. COMMAND AND CONTROL SYSTEMS AND FUNCTIONS

15. General

Joint counterair operations require reliable C2 capabilities that allow the JFC/JFACC/AADC, component commanders, and subordinate forces to integrate and synchronize/deconflict OCA and DCA operations. Effective C2 systems facilitate centralized planning and direction and decentralized execution, helping commanders to synchronize geographically separated operations into a unified action. C2 systems must support OCA operations while at the same time detecting, identifying, and tracking threats in order to warn, cue, and coordinate DCA assets, including providing accurate warnings of enemy missile launches and impact points.

Refer to JP 6-0, Joint Communications System*, for details regarding planning communications systems for joint operations.*

16. Requirements, Infrastructure, and Resources

a. **Requirements.** C2 systems must be capable of rapidly exchanging information, interfacing among components, and displaying a CTP to all participants. The joint components are typically tasked to provide a CTP. The CTPs and information from the joint planning network contribute to a JFC's COP. The information flow should be as complete, reliable, secure, and as near real time (NRT) as possible to support commanders' decision-making cycles. For every operational element involved in counterair, the C2 family of systems must support the following:

(1) Rapid communications and coordination links and procedures.

(2) Data fusion and decision-making nodes.

(3) Warning and cueing systems.

(4) Links to dedicated weapons systems, other MNF partners, and/or civilian authorities.

(5) Vertical, horizontal, technical, and procedural interoperability. Counterair C2 processes are built using existing national, joint, Service, and agency systems and capabilities.

b. **Infrastructure.** The C2 infrastructure must consist of interoperable systems that provide complete coverage for an integrated diverse force spread across a theater/JOA including considerations for any MNF assets. The systems may include large, fixed-site C2 facilities; small remote relay sites; mobile land and maritime sites; and airborne and space systems. The C2 architecture provides the timely intelligence and operational information needed to plan, employ, coordinate, deconflict, execute, and sustain joint counterair operations. These systems also facilitate the integration of counterair with other joint operations via rapid communications among commanders, staffs, sensors, weapon systems, and supporting agencies.

(1) Part of that infrastructure is the TAGS, a system of the various component air-ground systems integrated for planning and execution of air-ground operations. The TAGS consists of an overarching joint C2 architecture and Service coordination links. It is not a formal system in itself, but rather the sum of the component air-ground systems operating in the theater. It is applicable to all theater operations to include air, ground, maritime, and amphibious operations.

Refer to ATP 3-52.2[FM 3-52.2]/MCRP 3-25F/NTTP 3-56.2/AFTTP 3-2.17, Multi-Service Tactics, Techniques, and Procedures for the Theater Air-Ground System*, for detailed discussion of the TAGS and the Service component contribution to the infrastructure.*

(2) Theater missile warning is provided via the theater event system (TES), which is comprised of the systems, components, nodes, communications links, and interfaces required to support the missions reliant on the TES for data. The TES relies on the

Integrated Broadcast Service Common Interactive Broadcast for data dissemination into theater.

(3) The IADS is another part of the infrastructure that is not a formal system, but an integration of numerous systems that includes not only C2, but sensors, weapons, etc. Although primarily for DCA operations, some components of the IADS infrastructure and C2 architecture comprise a component of the TAGS.

Refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*, for additional details.*

c. **Resources.** Service components, the JFSOCC, and specialized joint communications elements provide the core of the communications capabilities for C2 for the joint force. The following summarize some of those capabilities that contribute to C2 for various aspects of counterair:

(1) **Air Force C2.** The Air Force TACS provides resources for a C2 infrastructure that can support the AFFOR or joint operations. The TACS includes the following elements that function under the tenets of centralized control and decentralized execution for joint air operations.

(a) The Air Force AOC is the senior air operations element of the TACS with the primary function to plan, direct, coordinate, and control air operations. It is capable of operating as a JAOC for the JFACC.

(b) The CRC, as a worldwide deployable airspace control and battle management platform, is employed at the tactical level to support air operations planning and execution across the entire range of operations. The CRC operates independently or in combination with other tactical C2 elements (e.g., Joint Surveillance Target Attack Radar System [JSTARS], the air support operations center, and AWACS). It supports horizontal integration with tactical resources and vertical integration with the AOC. A CRC is capable of being a platform for a RADC/SADC.

(c) The air support operations center is the primary control agency of the TACS for the execution of air operations in direct support of land operations. Its primary mission is to control air operations short of the fire support coordination line (FSCL) or in its assigned area. It is normally collocated with the senior Army fires element. It is directly subordinate to the AOC and integrates air operations within its assigned corps sector, to include CAS, air interdiction, ISR, targeting, SEAD, theater airlift, and personnel recovery.

(d) JSTARS E-8C aircraft provide battle management and NRT surveillance and targeting information on moving and stationary ground and maritime targets, slow-moving rotary- and fixed-wing aircraft, and rotating antennae. These surveillance platforms also provide attack support to friendly offensive air elements in all ambient light and weather conditions. JSTARS is capable of operating as an airborne extension of the air support operations center. Based on the JFC's objectives, JSTARS supports the JFLCC's scheme of

maneuver as well as the JFACC. JSTARS is a battle management, intelligence collection, and C2 platform and is considered a HVAA.

(e) The E-3 AWACS aircraft is a C2 platform with organic sensors that provides battle management and air surveillance functions, including airspace management; identifies and tracks friendly aircraft; detects, identifies, and tracks enemy air threats for early warning and AD purposes; and supports execution of the ATO. AWACS works directly with other Services' AD aircraft and SAM units supporting the joint defense against air and, to a limited extent, BM threats. An AWACS may be designated as a platform for the SADC if a CRC or other ground-based C2 node is not in the JOA/AOR. This is usually a short-term solution until a CRC deploys into theater or if an operation is of limited scope or a short duration. AWACS is considered a HVAA.

(f) BCCs are the tactical-level C2 nodes that conduct DCA operations in the NORAD/USNORTHCOM and USPACOM AORs. The BCC operates independently or in combination with other tactical C2 elements. It supports horizontal integration with tactical resources and vertical integration with the AOC. A BCC is capable of being a platform for a RADC/SADC.

(2) **Army C2 Assets.** The Army air-ground system (AAGS) is the control system for synchronizing, coordinating, and integrating air operations with an Army land force commander's scheme of maneuver. The AAGS initiates, receives, processes, and executes requests for air support and disseminates information and intelligence produced by aerial assets. Although some elements within the AAGS (such as the tactical air control party [TACP]) belong to different Services or other nations, they function as a single entity in planning, coordinating, deconflicting, and integrating air support operations with ground operations. The Army elements of the AAGS consist of operations, fire support, AD, mission command, and coordination/liaison elements. The Army uses fires cells at all echelons to plan, coordinate, and execute joint fires and fire support within the Army commander's/JFLCC's AO. These elements can support OCA operations by advising the Army unit commander/JFLCC on capabilities and the effective use of assets and by assisting in the planning and coordination of attacks of OCA targets within the AO.

(a) **BCD.** The Army provides a BCD as the interface for selected battlefield functions between the commander, ARFOR/JFLCC and the commander, AFFOR/JFACC. Typically, a BCD is collocated with the JAOC. The BCD supports OCA operations by advising the JFACC on the capabilities and effective employment of ARFOR systems. The BCD passes JFACC requests for commander, ARFOR/JFLCC support for OCA. The BCD assists in the synchronization of joint air operations with commander, ARFOR/JFLCC maneuver and fires and the exchange of operational and intelligence data.

(b) **AAMDC.** For OCA, the AAMDC, through its attack operations cell, plans, analyzes, tracks, develops, and nominates enemy air and missile targets. The AAMDC should collocate with, or nearby the JAOC, or provide a liaison element to, the JFACC. For DCA, the AAMDC is the senior Army air defender for both the theater Army commander/JFLCC (as the TAAMDCOORD) and the AADC (as the DAADC).

For more information on Army fire support C2 assets, see JP 3-09, Joint Fire Support.

(3) **Navy C2 Assets**

(a) **Navy Tactical Air Control System (NTACS).** NTACS is the principal air control system afloat. The senior Navy air control agency is the Navy TACC and the subordinate airborne element is the E-2 Hawkeye aircraft. The Navy TACC plans and conducts naval air operations, as well as coordinates operations that affect airspace. If the JFACC's command operations center is afloat, the Navy TACC may support operations as the JAOC. The link between the JFACC and naval commanders is the NALE located in the JAOC. The NALE assists in integrating naval air capabilities (including counterair) to help the JFACC meet JFC objectives through the NTACS.

(b) **MOC IAMD Cell/CTF IAMD.** The MOC's IAMD cell serves as the JFMCC's primary planning and execution coordination conduit with higher headquarters, other Service components (e.g., the AOC and AAMDC), subordinate forces, and outside support agencies for IAMD requirements. The JFMCC normally delegates TACON of AMD-capable ships and assigns planning and command functions to the task force commander who has the preponderance of ships performing AMD operations. If activated and in place within the AOR, these functions may be assigned to a CTF IAMD. CTF IAMD provides a standardized C2 layer between the NFC and subordinate maritime commanders focused on tactical-level missions.

(c) **E-2 Hawkeye.** The E-2 is an all-weather, aircraft carrier-capable, tactical airborne early warning and control aircraft with comparable C2 capabilities to the E-3 AWACS. With its organic sensors (active and passive), as well as large communication and data link suite, it provides airborne tactical C2 and air surveillance functions, including airspace management; identifies and tracks friendly aircraft; detects, identifies, and tracks enemy air threats for early warning and AD purposes; and supports execution of the ATO. Hawkeye aircraft also work directly with other Services' AD aircraft, C2 platforms, and SAM units supporting the joint defense against air and missile threats. Cooperative engagement, capability-equipped Hawkeye aircraft can extend the lethal range of the Aegis weapon system's standard missile (SM) against airborne low-altitude, low-radar cross-section targets. E-2 crews are able to act as a SADC in a limited role if a CRC or other ground-based C2 node is not in the JOA/AOR. This is usually a short-term solution until a CRC or more capable airborne platform deploys into theater or if an operation is of limited scope or a short duration. E-2 is considered a HVAA.

(4) **US Marine Corps C2 Assets**

(a) **The Marine Air Command and Control System.** The Marine air command and control system provides the Marine ACE commander with the capability to command, control, and influence the application of Marine aviation assets.

(b) **Marine Air C2 Agencies**. The Marine air C2 agencies involved in OCA and DCA are the Marine tactical air command center (Marine TACC) and the TAOC.

1. The Marine TACC is the senior agency for the ACE commander and battle staff to plan, command, supervise, and direct MAGTF air operations. The Marine TACC maintains complete information on the friendly situation, including an integrated air picture with ground combat information essential to the air effort. It can provide automated displays, ATO generation equipment, and data link feeds. The Marine TACC consists of three mutually supporting, cross-functional operational sections supported by a centralized intelligence organization. The operational sections are: current operations, future operations, and future plans. The Marine TACC current operations section executes and assesses the daily ATO, while the Marine TACC future operations section helps develop future ATOs and OPORDs for the ACE. The Marine TACC future plans section conducts aviation planning in support of the next mission, or potential mission, assigned to the MAGTF. The Marine TACC air combat intelligence section supports the entire Marine TACC by producing and disseminating aviation-specific, all-source intelligence required to plan and execute air operations, to include counterair operations.

2. The TAOC is the principal AMD agency in the MAGTF. Subordinate to the Marine TACC, the TAOC provides real-time surveillance, direction, positive control, and navigational assistance for friendly aircraft. It performs real-time direction and control of all anti-air warfare operations, including manned interceptors and surface-to-air weapons. The TAOC has the capability to serve as a SADC.

(c) The MARFOR normally provides a MARLE to the JAOC to serve as the Service conduit to the JFACC/AADC.

(5) The SOF under a JFSOCC (or a CDRJSOTF designated for an operation) have their own joint force C2 architecture and are linked to, and a part of, the JFC's C2 architecture. The CDRJSOTF has at least one secure, dedicated C2 network for their operations and other networks with the special operations Service components. Although SOF can play a significant role in OCA operations and they may share common operational areas with the JFACC (both routinely operate deep in enemy territory), SOF controls its own operations or operations in which SOF is the supported command. SOF have limited capability for DCA. Therefore, SOF aviation and surface activities must be closely coordinated with all other joint operations, from planning through execution, to provide synchronization/deconfliction and to prevent friendly fire. The SOLE serves as the JFSOCC's representative to the JFACC and coordinates, deconflicts, and integrates all SOF air and surface activity into the ATOs and ACOs.

(6) **Joint Interface Control Officer (JICO).** The JICO is the senior interface control officer in support of MTN operations and is the MTN coordinator for the JDN within the theater/JOA. The MTN is the primary feed/data source to support generation of a CTP. The CTP subsequently feeds the CCDR's theater COP. The JICO plans, monitors, and manages the architecture and technical integration of joint data and communications systems for the MTN. The MTN components are the TDLs such as Link 11, Link 11B, or Link 16. The JICO controls and acts as the coordinating authority for the joint interface control cell and for any regional interface control officer (RICO)/sector interface control officer (SICO) for planning and executing TDL functions that cross regional and/or sector AD boundaries or impact the theater-wide MTN. When a JTF is formed, there will be only one JICO per JTF,

and the JICO will normally be located in a C2 facility with connectivity to the primary TDLs (normally the JAOC). There may be Service component interface control officers located at the joint interface control cell.

(a) When regional/sector AD commands are established, the JICO will coordinate with the RICOs/SICOs designated for and normally located at those commands. The RICO/SICO coordinates with the JICO but is responsible to the RADC/SADC for TDL continuity at their level. RICOs/SICOs may require interface control cells depending upon the complexity of their TDL networks. See Figure II-2 for a depiction of a notional JICO functional/command relationship.

(b) The JICO is responsible to the JDNO for the MTN, which is one of four networks in the JDN. In turn, the JDNO is responsible to the JFC for integration of information from the sub-networks into a common track database used to generate the CTP. The JDN is the primary feed to support generation of the CTP. The CTP and information from the joint planning network contributes to the COP.

Refer to Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3115.01, Joint Data Network (JDN) Operations, Volume I*; and CJCSM 6120.01,* Joint Multi-Tactical Data Link Operating Procedures Overview*, for full details regarding the JICO and JDN and TDL operations.*

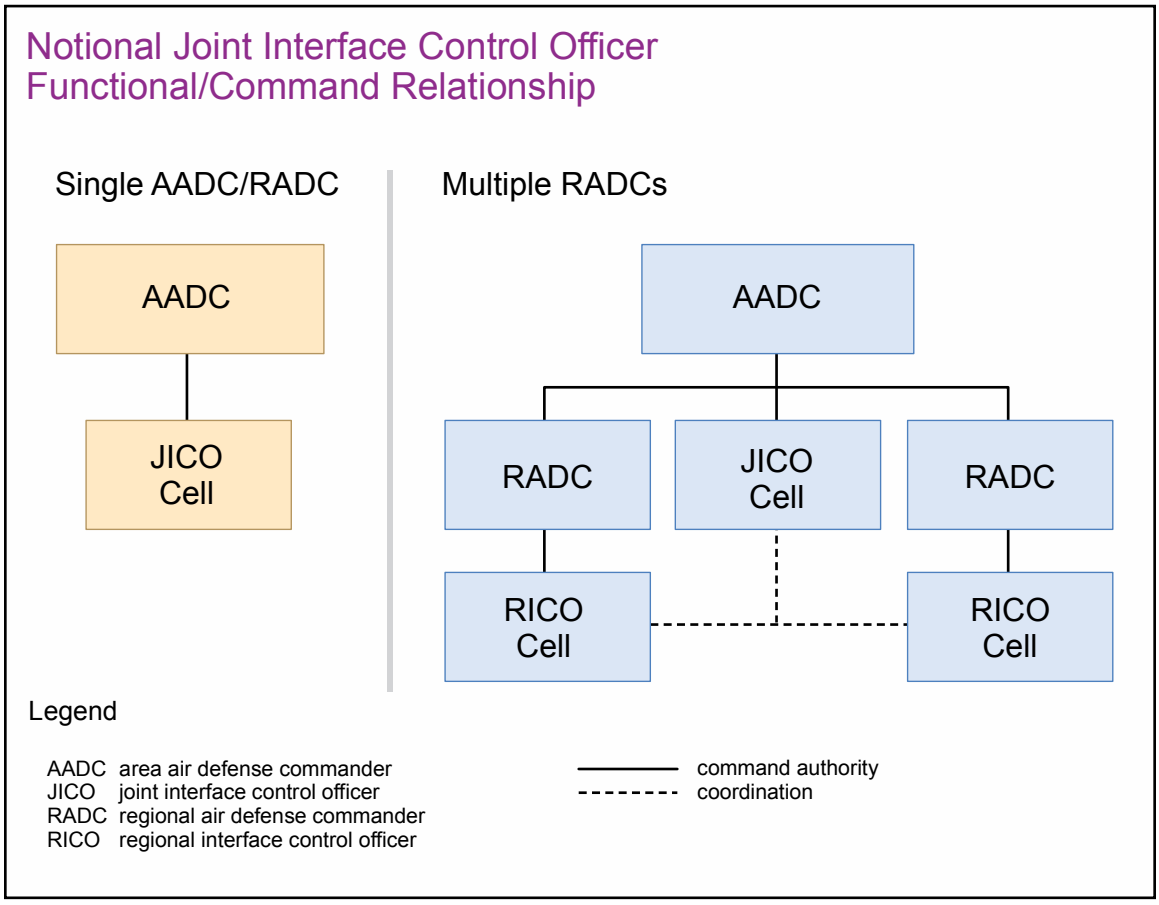

Figure II-2. Notional Joint Interface Control Officer Functional/Command Relationship

(c) The Navy JICO at the MOC (with JFMCC or CTF IAMD) also requires connectivity to primary TDLs as both a redundant capability to the JAOC JICO and in support of multi-mission Navy ships or as a RADC/SADC platform.

17. Situational Awareness

a. A primary objective the staff seeks to attain for the commander and for subordinate commanders is **situational awareness, a prerequisite for commanders to understand and anticipate counterair opportunities and challenges.** In its simplest terms, this results in the ability to "see first, understand first, and act first" across the full range of military operations. Therefore, supporting situational awareness at this level dictates technical integration of joint data and communications systems for the MTN. True understanding should be the basis for information provided to commanders in order to make decisions. Knowledge of friendly capabilities and enemy capabilities, intentions, and likely COAs enables commanders to focus joint counterair efforts where they best and most directly contribute to achieving objectives. Further, the JFC's situational awareness must be broad to include the relevant actions and intentions of MNF partners, civilian agencies, adjacent commands, higher headquarters, and HN authorities.

b. The CCDR uses the COP and CTP for theater situational awareness. A subordinate JFC uses the COP and CTP as graphic depictions of the situation within the theater/JOA. There may be multiple CTP inputs to the COP. The COP and CTP normally indicate position location information of significant friendly, neutral, unknown, and enemy forces. The COP and CTP are normally shared with the component commands. The COP is at best NRT. Currently, the COP is the picture provided in the Global Command and Control System, supplemented by C2 battle management, and communications system-provided BMD situation awareness at key locations. A COP facilitates collaborative counterair planning and assists all echelons to achieve situational awareness. A theater JFACC may have the COP at the JAOC.

(1) For counterair situational awareness, a properly managed CTP:

(a) Reduces the degree of operational uncertainty.

(b) Allows commanders to create and control the dynamics of the operational area and not react to them.

(c) Gives commanders more situational awareness of the operational tempo of MNF and US forces.

(d) Reduces decision-making time, thereby dominating the opponent's decision cycle.

(e) Gives commanders the ability to identify, focus, and control counterair operations against the enemy's capabilities.

(f) Allows the commander to monitor the execution phase of counterair operations and assess how well the operations are progressing in accordance with the plan.

(g) Provides commanders and operators at all levels with shared situational awareness to coordinate joint counterair operations.

(2) The data link interfaces used for consolidating the track information for the CTP are the responsibility of the JICO who works with the JFACC's CJE for air/space track data and JFMCC's CJE for maritime track data and subsequent data inputs to the JFC's CTP/COP. The JICO and the JICO cell normally reside at the JAOC to manage all theater/JOA data link interfaces. There may be Service component interface control officers located at the JICO cell, or at their respective Service headquarters, and there may be subordinate interface control officers designated at regional/sector AD commands to manage links for the RADC/SADC that reports counterair-related tracks up to the JAOC. When designated as a RADC, CTF IAMD requires access to voice, data, and chat circuits required for DCA coordination and execution across the joint force and with multinational partners.

c. Additional counterair situational awareness is provided by the theater joint intelligence operations center by processing information from surveillance and reconnaissance sensors for display on various media, including the COP.

18. Battle Management

a. Battle management is the management of activities within the operational environment based on the commands, direction, and guidance given by appropriate authority. C2, including battle management, is the binding element that integrates capabilities and operations within and among joint forces.

b. Battle management entails visualizing where, when, and with which forces to apply capabilities against specific threats. The dynamics of the counterair mission often require flexibility during decentralized execution that normally takes place at the tactical level. This flexibility, accomplished through battle management, allows the direct, often real-time monitoring and execution of operations based on the intent and within the scope of the operational-level commander's orders.

c. Successful counterair battle management supports synchronization and integration of active and passive AMD efforts with other air operations, supporting unity of effort and reducing the expenditure of resources and the risks of friendly fire. **For subordinate commanders and controllers, effective battle management requires situational awareness, managing available resources, directing and controlling the correct action in a timely manner, and monitoring and assessing execution.**

d. Based on the principles of centralized planning and direction and decentralized execution, the JFC typically delegates commit, ID, and engagement authority to the JFACC/AADC and authorizes further delegation to the optimum level for mission accomplishment consistent with the ROE. The responsibilities and authorities assigned to battle managers should be clear and unambiguous, and may be limited in time, scope, or by specific operations/activities.

e. Automated battle management aids can assist operators in sensor management and weapons pairings, allowing operators to manage by exception. The speed of the engagement

process and the complexity of sensor-weapons performances and integration may require some degree of automation to assist in effective intercepts. Automated systems are not infallible, and weapons systems operators must maintain situational awareness and exercise sound judgment in accordance with ROE to prevent friendly fire.

f. **Authorities.** Short missile engagement windows place a premium on clearly established authorities. For example, in AORs without active conflicts involving air or missile threats, the GCC may only approve the theater AADC for engagement authority of inbound threats within friendly airspace. In an operational area with imminent or ongoing hostilities, the JFC may approve delegation of engagement authority down to a RADC/SADC. The air and missile threats posed by conventional adversaries are normally known, and specific plans and orders (including ROE) are approved in anticipation of the warning intelligence that would precede a possible hostile launch.

CHAPTER III
PLANNING

"If you know the enemy and know yourself, you need not fear the result of a hundred battles."

Sun Tzu, *The Art of War*

1. General

a. This chapter discusses countering air and missile threats planning from both the theater and global perspectives. Theater planning is discussed within the context of counterair. Counterair operations strive for the desired degree of control of the air and protection required by the JFC to achieve the desired objectives. Global planning addresses global MD and offensive operations that affect more than one CCDR and require synchronization among them.

b. Counterair requires a combination of OCA and DCA operations based on the JFC's air apportionment decisions, balanced against the enemy's potential COAs and air and missile threats. The integration and synchronization of OCA and DCA, in conjunction with the other joint missions supporting the JFC, are the basis for counterair planning. Counterair planning is discussed in the context of preparation, major considerations, and enabling capabilities that support both OCA and DCA. This discussion assumes a JFACC is responsible for counterair (specifically OCA operations) and an AADC is responsible for DCA operations, whether or not the JFACC is designated as both the AADC and ACA. Counterair planning includes accurate joint intelligence preparation of the operational environment (JIPOE) and intelligence preparation of the battlespace (IPB), airspace control, ROE, ID and CID requirements, and some major enabling capabilities.

c. Global planning includes coordination of cross- and multi-AOR aspects of offensive and defensive operations. It enhances a GCC's ability to employ forces and capabilities within their AOR and to support another GCC. Planners must balance competing requirements for potentially scarce resources. BMD planning tools assist planners in both preparing and validating defense designs in multiple AORs simultaneously.

SECTION A. INTELLIGENCE PREPARATION

2. General

Knowledge of the potential enemy is one of the fundamentals of joint warfare. JIPOE and IPB are the analytical processes and methodologies employed by joint commands, agencies, and Services to produce intelligence assessments, estimates, and other intelligence products to support the commander's decision making. JIPOE and IPB generally differ in terms of their relative purpose, focus, and level of detail. JIPOE is focused at the JFC level, while IPB is focused at the joint force component command and Service level. To support the decision-making process, the JIPOE effort must remain dynamic, constantly integrating new information into the initial set of facts and assumptions. The JIPOE effort must be fully

integrated and coordinated with the separate IPB efforts of the component commands and Service intelligence centers. JIPOE and IPB are continuous processes and should begin as early as possible during the planning process, preferably during peacetime.

3. Joint Intelligence Preparation of the Operational Environment and Intelligence Preparation of the Battlespace

a. JIPOE is described as the continuous, analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products to support the JFC's decision-making process and all joint force planning. By enhancing the JFC's understanding of relevant aspects of the operational environment, JIPOE improves the JFC's ability to understand, anticipate, and/or influence the decision making and associated behavior of relevant actors in a manner consistent with operational objectives. JIPOE's main focus is to provide predictive intelligence designed to help the JFC discern the adversary's probable intent and most likely future COA. JIPOE helps the JFC to react faster and make better decisions than the adversary, or simply stated, to stay inside the enemy's decision-making cycle. CCMD intelligence planners coordinate with intelligence collection managers and all-source intelligence analysis managers to develop JIPOE products tailored to and synchronized with the ongoing joint planning function or operational assessment activity and delivered to best support CCDR and subordinate commanders' counterair decision making. JIPOE supports counterair planning by identifying adversary air and missile capabilities, location of critical assets and infrastructure, likely employment methods, and environmental characteristics in the operational area. JIPOE products are used by JFC and component staffs in preparing their estimates and analysis, selection of friendly COAs, and continuing planning requirements (e.g., development of a viable CONOPS).

b. JIPOE utilizes a macro-analytic approach that identifies an adversary's strategic vulnerabilities and centers of gravity (COGs), whereas IPB generally requires micro-analysis and a finer degree of detail in order to support component command operations. JIPOE and IPB analyses are intended to support each other while avoiding a duplication of analytic effort.

c. IPB is specifically designed to support the individual operations of the component commands. Component command IPB products provide a level of detail and expertise that the CCMD must draw upon in order to form an integrated or total picture of an adversary's capabilities and probable COAs. Certain factors of operation planning are particularly important when conducting the IPB process, and failure to properly consider an adversary's most likely and most dangerous COAs can have serious consequences. This is a focal point of counterair integration, and procedures must be developed to rapidly share data between forces conducting OCA and DCA operations.

d. IPB assists the counterair planner in visualizing the operational environment, assessing adversary air and missile capabilities, and identifying the adversary's probable intent and attack locations. IPB is not simply enumeration of an adversary air and missile system order of battle, but must describe how and where the adversary air and missile forces operate.

e. JIPOE/IPB for counterair relates to any information about adversary air and missile threats and supporting infrastructure, including information on the following:

(1) Location, status, and disposition of WMD and the capabilities for employing them.

(2) Aircraft operating bases and dispersal sites, to include aircraft carriers and other air capable ships.

(3) Missile systems, including their infrastructure, storage and operating locations, launch platforms, C2 nodes, missile stocks, forward operating locations/FOBs, transload sites, reloading/refueling sites, terrain and road infrastructure (bridges, tunnels) where their destruction could interrupt enemy missile operations, and logistics. For example, intelligence will identify BM operating areas where an adversary's missile C2, infrastructure, and forces may operate.

(4) IADS order of battle (e.g., aircraft, SAMs, airfields, and AAA), including C2 systems (e.g., early warning/ground control intercept [GCI] sites and facilities), communication links, and any associated facilities.

(5) Signals intelligence capabilities and EW assets, including operating instructions, vulnerabilities, redundancies, capabilities, and locations.

(6) Changes by adversary in direct and indirect threat emitters, including wartime reserve modes and reprogramming of target sensing weapon systems.

(7) Climate and terrain within the JOA and their effects on friendly and enemy operations.

(8) Overall assessment of the strengths and vulnerabilities of adversary offensive and defensive air systems, including location and status of all key nodes and targets that affect their ability to sustain air operations.

(9) Analysis of adversary's potential escalation COAs if their leadership, national C2, and other strategic systems are attacked.

(10) Adversary preparations, including camouflage, concealment, and deception; movement of noncombatants and civilians; ID of no-strike sites; indications of hidden enemy capabilities; etc.

f. CCDRs, consistent with prioritized campaign objectives, and directed by the *Guidance for Employment of the Force*, focus intelligence efforts on adversaries and their air and missile threats in their theaters and adjacent areas of interest, and assess the vulnerability to cross-AOR threats. Emphasis should be placed on WMD capabilities and potential aircraft and missile delivery systems. Routine collection of counterair-related indications, as well as counterair-related warning intelligence, should prevent the strategic or tactical surprise of an unanticipated capability by a potential adversary. Intelligence can support ROE decision points for proactive AMD protection measures based on imminent hostilities.

Details regarding the JIPOE and IPB processes can be found in JP 2-01.3, Joint Intelligence Preparation of the Operational Environment.

SECTION B. AIRSPACE CONTROL CONSIDERATIONS

4. General

a. The primary goal of joint airspace control is to enhance combat effectiveness of the joint force. Airspace control should maximize the effectiveness of combat operations without adding undue restrictions and with minimal adverse impact on the capabilities of any Service/functional component. For counterair, all components of the joint force may potentially share a part of the theater/JOA airspace for offensive/defensive operations. This environment becomes increasingly complex with the addition of civilian, nongovernmental, and international organizations, and interagency, HN, and MNF users. Airspace control procedures and planning considerations must allow for a transition from peacetime operations to combat operations and back to peacetime operations.

b. Effective airspace control reduces the risk of unintended engagements against friendly, civil, and neutral aircraft; enhances counterair operations; and permits greater flexibility of joint operations. Although airspace control is the responsibility of the ACA, the controlling authority of the ACA does not infringe on the command authorities vested in commanders to approve, disapprove, or deny combat operations. The ACA recommends and the JFC approves the boundaries within which airspace control is exercised and provides priorities and restrictions regarding its use. **Airspace control requires positive and procedural controls.**

(1) Positive control is a method of airspace control that relies on positive identification (PID), tracking, and direction of aircraft within an airspace. It is conducted using electronic means by an agency, or agencies, assigned the appropriate authorities and responsibilities to provide positive control.

(2) Procedural control relies on common procedures, designated airspace, and promulgated instructions by an airspace control element to deconflict and activate air traffic control (ATC) measures, airspace coordinating measures, fire support coordination measures (FSCMs), and air defense measures (ADMs).

c. **ACS.** The ACA establishes an ACS that is responsive to the needs of the JFC and integrates when appropriate the ACS with that of the HN. The ACS is an arrangement of those organizations, personnel, policies, procedures, and facilities required to perform airspace control functions. Airspace control is executed through a responsive ACS capable of real-time control that includes various airspace control elements (e.g., ATC units, ships, CRC, TAOC, E-2, and AWACS). The ACS requires timely exchange of information through reliable, secure, and interoperable COMNETs. Elements of the ACS may have dual roles as DCA assets (e.g., a CRC can support a RADC/SADC).

d. **ACP.** Beginning with an ACP approved by the JFC, the ACA develops broad policies and procedures for airspace control and for the coordination required among units within the theater/JOA. **The ACP establishes the procedures for the ACS in the**

operational area. The ACP must consider procedures and interfaces with the international or HN ATC systems because the ACP is designed to identify all airspace users, facilitate the engagement of hostile air and missile threats, and expedite the safe passage of friendly and neutral forces. To provide effective operational procedures, the ACP and AADP should be integrated with the JFC's joint plan and orders.

e. **ACOs.** Implementation of the general guidance of the ACP is accomplished through ACOs that provide specific airspace control procedures applicable for defined periods of time. ACOs are designed to deconflict and identify all airspace users and reduce the risk of friendly fire. **The ACO implements the ACP and provides the details of the approved requests for coordination measures.** It is published either as part of the ATO or as a separate document and must be adhered to by all components. It defines and establishes airspace for military operations. It notifies all agencies of the effective time of activation and the composite structure of the airspace to be used. The ACO may include coordination measures, such as air routes, base defense zones, drop zones, pickup zones, restricted areas, etc., and FSCMs, such as the FSCL, no-fire areas, and restrictive fire areas. A change to the ACO should be distributed whenever a new coordination measure and associated procedures are established, deleted, or modified. ACOs are frequently issued and modified during high-tempo operations.

f. **Coordination Measures.** Coordination measures are designed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Coordination measures may take several forms and will be discussed in paragraph 6, "Coordination Measures."

g. **Integration of the ACP with the AADP.** The ACP facilitates synchronization and deconfliction of joint operations. Prioritization of airspace users for deconfliction/synchronization is essential. The ACP must be integrated with the AADP because airspace control areas normally coincide with AD areas/sectors, and there are DCA operations and procedures that could interfere with other airspace control procedures. **Both plans should complement available C2 systems and capabilities.** JFC-approved coordination measures help integrate the two plans. Airspace control must be flexible enough to meet rapid changes such as the real-time re-tasking of OCA forces against TSTs.

5. Planning and Coordination Requirements

a. **Planning for Airspace Control in the Combat Zone.** Every JTF is different and each operational area has specific operational requirements for airspace. These requirements must be determined as early as possible and incorporated in the overall joint force planning effort. Political constraints and national and military airspace management systems and procedures and their capabilities and limitations are important considerations. ROE, disposition of AMD weapons, fire support plans, and procedures for ID of US and MNF aircraft are also important items to consider. The following broad principles of planning are essential for effective airspace control:

(1) **Interoperability.** Plans for airspace control should be exercised in the joint and multinational environments during peacetime and in conflict. Planning should strive to

maximize the interoperability of equipment, personnel, and terminology and facilitate continuous, detailed coordination. **The ACS must function with the AMD families of systems and may include dual tasking of certain radar, sensor, and C2 assets.** Interoperability is essential to effective operations, conservation of force, and to reduce the risk of friendly fire.

(2) **Unity of Effort.** The ACS must be integrated and coordinated with the AMD system, including dual tasking of assets as necessary. Integration of a HN AD system (as part of an IADS) and ATC system should be properly planned. Proper liaison is essential and should be identified and exercised prior to hostilities when integrating HN and joint force airspace control.

(3) **Mass and Timing.** Planning should consider the aircraft traffic volume and timing to fully integrate DCA with OCA and other joint missions. Constraints may require changes in positive or procedural control measures.

(4) **Integrated Planning Cycles.** The airspace control planning cycle must be integrated with the joint operation/campaign planning cycle, and more specifically, the AADP planning cycle. The ACP is normally added as an appendix to the operations annex of the joint operation plan (OPLAN) or OPORD.

(5) **Degraded Operations.** The ACP must anticipate degraded operations of airspace control and AMD systems as the results of attacks (combat losses) and enemy CO and EW efforts. Loss of communications can dramatically degrade positive control measures. Effective plans should span the spectrum from minimal to full degradation and consider the effects of adverse weather and night operations.

Refer to JP 3-52, Joint Airspace Control*, for detailed information regarding airspace control, the ACP, and the ACO.*

b. Military ATC facilities and radar control units (e.g., TAOC, CRC, or BCC) will normally provide flight following and monitoring throughout the airspace control area. If a HN ATC system is used before hostilities, then procedures must be in place to revert to the military system when required. The urgent exchange of information between the ATC facilities, radar control units, and airspace users requires reliable voice and data nets; radars; identification, friend or foe (IFF); and selective ID features. **Accurate and timely ID enhances engagement of enemy aircraft and missiles, conserves friendly resources, and reduces risk to friendly forces.**

c. Key AMD considerations when developing the ACP to support the AADP are:

(1) The ACP should include processes to establish procedural coordination measures, including activating/deactivating weapon engagement zones (WEZs) and minimum-risk routes (MRRs) and procedures for AMD and airspace control operations in a degraded communications environment. Detailed engagement procedures and decentralized weapons control procedures (as applied to AMD) are key to counterair operations in a degraded environment. The geographic placement of weapons, the location of specific AMD

operations, and specific procedures for ID of aircraft and missiles are critical factors to include in the ACP.

(2) The ACP and AADP must be distributed to all joint force components, applicable HN, MNF, and interagency partners, as well as those commands providing direct delivery (inter-theater) and/or intra-theater support to the theater/JOA. **Not understanding or following the ACP and AADP may result in hazardous air traffic situations, cause confusion between aircraft and control agencies, and increase the risk of friendly fire.**

d. Some specific counterair requirements that must be accounted for in the ACP or through coordination measures include:

(1) General orbit locations for DCA combat air patrols (CAPs), airborne warning and control, C2, ISR, AR, and EW platforms.

(2) Coordinating authorities for controlled airspace and their responsibilities and coverage areas, including the RADCs/SADCs and other C2 nodes.

(3) WEZs and their activation/deactivation procedures.

(4) Procedures for positive and procedural airspace controls.

(5) PID and procedural ID criteria and procedures.

(6) Procedures to expeditiously route outbound OCA packages through friendly airspace. This will become more complex in a multinational environment.

(7) Develop airspace control procedures for OCA missions including the communications means (e.g., airborne C2, satellite communications) for missions that may occur beyond the sensor/communications range of ground-based C2 agencies.

(8) Locations and procedures for MRRs, for turning on/off IFF equipment, AD ID, and areas for sanitizing returning OCA packages from enemy aircraft.

(9) Procedures to support planned responses for AD emergencies.

(10) Procedures to support immediate attacks on TSTs by aircraft or long-range surface fires such as SSMs, rockets, and CMs.

(11) Identify airspace control tasks for airborne elements of the ACS (e.g., AWACS, E-2). The sensor capability of airborne platforms makes them well suited for providing airspace control for real-time execution of OCA and DCA operations.

(12) Procedures to recover aircraft unable to self-identify.

(13) Preplanned routes for UA recovering autonomously.

(14) Identify coordination measures and procedures that allow aircraft and surface fires to simultaneously engage ground targets in support of land forces.

(15) Identify coordination measures and procedures to minimize hazards to aircraft from outbound SAMs.

6. Coordination Measures

a. Coordination measures are employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Airspace control requires a combination of positive and procedural controls that rely on proper ID of the users. ID is discussed in Section D, "Identification." Positive control requires radar or other sensor tracking and direct communications between the airspace controller and the user. Procedural controls are established through coordination measures and amplifying guidance found in the ACP/ACO and special instructions (SPINS).

b. Coordination measures not already established in the ACP are normally forwarded through a component command's senior airspace control element to the ACA for processing and approval. Approved coordination measures are normally promulgated through ACOs and, when necessary, in the ATO. Some coordination measures are planned, requested, and approved, but not promulgated or activated until required.

c. For standardization, coordination measures have been categorized and defined/described with applicable uses and planning considerations. Coordination measures are grouped in the following categories: airspace coordinating measures, FSCMs, maneuver control measures, air reference measures, ADMs, maritime defense measures, and ATC measures.

d. A good example of the use of coordination measures for integrating procedural airspace control with DCA operations is the establishment of an ADM which implements a WEZ. WEZs are discussed in more detail in Chapter V, "Defensive Planning and Operations."

Refer to JP 3-52, Joint Airspace Control*, for more details regarding coordination measures and ATP 3-52.1[FM 3-52.1]/Marine Corps Warfighting Publication (MCWP) 3-25.13/NTTP 3-56.4/AFTTP 3-2.78*, Multi-Service Tactics, Techniques, and Procedures for Airspace Control.

7. Other Considerations

a. In a littoral environment, an amphibious operations area may encompass a sector of a land AO and include a missile engagement zone (MEZ). In this case, maritime combatants may be restricted by geography when defending selected coastal assets. **Linking land-based SAM systems with sensor data from maritime forces, or vice versa, can result in improved ability to defend littoral areas of the theater.** Without close coordination between land and maritime forces, a seam may result in AMD.

b. Operations along the edges of WEZs, sectors, or other geographically defined areas of airspace with separate controlling units/commands may create seams and present commanders with extensive coordination challenges. Enemy aircraft may cross into adjacent sectors during engagement or may fly through friendly corridors or attack targets in one

sector or WEZ from an adjacent area. The following are some considerations that may facilitate coordination:

(1) Establish procedures to coordinate handoffs of flight operations between sectors and regions that grant permissions to enter and depart airspace and coordinate combat zone control activities with HN ATC services. A dedicated COMNET/line for the regions/sectors is required for real-time handoffs.

(2) Liaison officers should be located at ATC centers that provide positive control for areas overlapping or adjacent to AD areas.

(3) Designate buffer zones in which one AD region/sector can authorize engagement in an adjacent area.

(4) Whenever possible, establish friendly air corridors outside the ranges of friendly AMD forces that rely only on visual ID to reduce the risk of friendly fire, since visually aimed surface weapons often have no capability to readily identify airspace boundaries or control measures in their portion of the operational environment. The ACA and AADC must collectively plan to address the issue.

c. For effective counter-unmanned aircraft system (C-UAS), particularly for LSS UAS, the ACP and AADP should include detailed procedures for threat UA detection, ID, and engagement. With the proliferation of small UAS by both joint and multinational forces, many of which do not have IFF capability and are similar or identical to threat LSS UA, the ACP and SPINS should include specific procedural control and coordination measures for control and/or deconfliction of friendly UAS.

d. During forcible entry operations or in undeveloped theaters, C2 should be simple and facilitate the joint force's ability to respond to a given threat. **The ACS and ACP must be continuously assessed through feedback from commanders to ensure they adequately support operational requirements in a potentially dynamic operational environment.** The initial architectures may need to be modified based on the situation and/or additional assets arriving into the operational area.

SECTION C. RULES OF ENGAGEMENT/RULES FOR THE USE OF FORCE

8. General

ROE are directives issued by a competent military authority that delineate the circumstances and limitations under which US forces will initiate and/or continue combat engagement with other forces encountered. Standing ROE, including rules on the inherent right of self-defense and supplemental measures for mission accomplishment, as approved by SecDef, are found in CJCSI 3121.01, *Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces.* Rules for the use of force (RUF) are directives issued to guide US forces on the use of force during various operations. The standing RUF apply to land HD missions occurring within US territory and to DOD forces, civilians, and contractors performing law enforcement and security duties at all DOD installations (and off-installation, while conducting official DOD security functions), within or outside US

territory, unless otherwise directed by SecDef. Approved ROE/RUF for mission accomplishment, applicable to a specific mission, are typically found in the mission's respective warning order, EXORDs, OPORD, OPLAN, ROE serials, and/or SPINS section of the ATO.

a. In accordance with CJCSI 3121.01, *Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces,* commanders may use supplemental measures to tailor ROE/RUF for mission accomplishment during the conduct of DOD operations. Additionally, commanders may submit requests to SecDef through the CJCS for mission-specific ROE/RUF, as required. Commanders at all levels establish ROE/RUF for mission accomplishment that comply with ROE/RUF of senior commanders, the law of war, applicable international and domestic law, and CJCSI 3121.01.

b. The JFC normally requests inputs from subordinate commanders when developing the ROE. To prevent violations or misunderstandings, ROE should be clear, concise, and unambiguous. The JFACC/AADC should offer ROE recommendations to the JFC in anticipation of the need, or when requested to do so. In conjunction with ROE recommendations, engagement authority and its delegation and other authorities must be considered and may be part of the ROE. **The key is to anticipate the requirement so the changes may be staffed and approved at the appropriate level for implementation when needed at a specific time or for a special circumstance.** When planning counterair operations, the component commanders must ensure they comply with the established ROE for the theater/JOA that may include special (and somewhat different) ROE for separate operations. ROE can limit or restrict certain options, targets, and methods. For example, the air ROE may restrict firing of air-to-air weapons if the target is beyond visual range (BVR) or across an international boundary. ROE are promulgated through command channels by numerous means and can normally be found in the SPINS section of the ATO. **Commanders must not only promulgate ROE to the joint force, but must also train the joint force on the ROE.**

c. **Multinational ROE Considerations.** MNF operations may further complicate processes for establishing and executing ROE. Some nations may have specific national caveats as conditions of participation in multinational operations that will preclude them from some types of operations. These caveats should be taken into consideration when planning air operations. Due to short engagement timelines when conducting MD operations, it is advantageous to have preexisting international agreements in place. In addition, planning should be synchronized and operations thoroughly trained and exercised. A set of general standing ROE is essential for all MD.

9. Criteria

a. **Obligation and Responsibility for Defense.** Unit commanders always retain the inherent right and obligation to exercise unit self-defense in response to a hostile act or a demonstrated hostile intent. Self-defense includes defense of other US military forces in the vicinity, as well as defense of any others identified in the mission-specific ROE. If time and circumstances permit, forces should attempt to deescalate the situation. In addition, force used in self-defense should be proportional; that is, sufficient to respond decisively. Force

used may exceed that of the hostile act or hostile intent, but the nature, duration, and scope of force should not exceed what is required to respond decisively.

b. **Functional Rules.** Commanders should also develop functional rules as to how ROE are to be tactically implemented. Some examples are **arming orders,** which specify circumstances under which commanders will permit loading or arming of munitions and **border crossing authority.** National borders are sovereign and cannot be crossed without specific authorization. Permission to violate borders may be pre-delegated to the JFC after hostilities or under specific conditions or restrictions to enable force protection. Border crossing authority also applies to aerial reconnaissance and potentially to SAM engagements. International law and treaties prohibit claims of sovereignty in outer space and allow for the freedom of movement of space objects.

c. **Integration with the ACP and AADP.** The ROE are an integral part of the AADP and the ACP. Commanders and their staffs must ensure the AADP contains specific instructions that implement the ROE. It is an important point to ensure the ACP, AADP, and the ROE are consistent with regard to aircraft in international air corridors. These corridors are usable by civilian aircraft, even those operated by an adversary, until the international governing body or an appropriate authority closes a route and a notice to airmen is issued. Commanders must ensure the proper response is made when penetrations of friendly airspace occur by international air flights.

10. Planning

a. Normally, the initial ROE are already established by higher authority or an existing plan. The JFC implements the ROE and anticipates changes to ROE based on operational necessity such as changing phases of an operation. The ROE are an integral part of the operations planning process, and the J-3 is responsible for their integration for the JFC. Centrally planned ROE, ID, and engagement procedures are vital for minimizing duplication of effort and the potential for friendly fire while providing necessary flexibility to engage.

b. When developing their ROE recommendations, commanders and staffs must coordinate with their staff judge advocates to ensure compliance with applicable US and international law. Once the ROE are approved, commanders, assisted by their staff judge advocates, promulgate the ROE and ensure all subordinate forces understand the ROE. Commanders must also maintain close coordination with the public affairs office to provide command or strategic messaging guidance.

c. Lower echelon MNFCs and local HN commanders may lack the authority to speak on behalf of their nations in the ROE development process. Complete consensus or standardization of ROE should be sought, but obtaining concurrence for ROE from the appropriate national authorities can be a time-consuming process.

d. US forces participating in MNF operations will follow the ROE established by the MNFC if authorized by SecDef. US forces retain the right of self-defense. Apparent inconsistencies between the right of self-defense contained in the US ROE and the ROE of a

MNF will be submitted through the US chain of command for resolution. While a final resolution is pending, US forces will continue to operate under US ROE.

SECTION D. IDENTIFICATION

11. General

a. ID is the process of determining the friendly or hostile character of an unknown detected contact and the product (classification) of that process. Assigning ID requires ID authority and criteria. ID authority is the authority to assign an identity classification to an unknown contact, if possible. The JFC normally delegates ID authority to the JFACC/AADC and authorizes further delegation to subordinate commanders (e.g., RADC/SADC) for decentralized execution as allowed by ROE and necessitated by the operational situation. ID authority and ID criteria should be stated and discussed in the AADP and ACP for approval by the JFC. Both ID authority and criteria may require modification, sometimes in conjunction with ROE, in a dynamic operational environment and/or with changes in phases of the operation or campaign.

b. ID is an essential and inseparable part of airspace control and AD operations. Comprehensive surveillance and accurate and persistent tracking combined with accurate, timely, and consistent ID enhances situational awareness, improves weapons employment options, helps conserve friendly resources, and reduces the risk of friendly fire incidents.

c. The CID process complements the ID process by supporting engagement decisions. CID is essential to prevent friendly fire in dynamic counterair operations and to ensure economy of force. For counterair, CID should be accomplished with NRT or better exchange of information between airspace control/AD units and airspace users to meet the time and accuracy demands of combat operations. CID is discussed separately in paragraph 14, "Combat Identification."

12. Methods of Identification

a. The intent of an ID process is to either facilitate airspace control or to support an engagement decision through CID. The objective of CID is to obtain the highest confidence PID possible. Lacking PID, the objective is to reach the level of confidence in an ID that can be supported by the ROE for an engagement authority to make a decision. ID can be accomplished through several recognized methods. The JFC approves the procedures used for ID and designates who may be delegated that authority in the AADP, SPINS, and ACP.

b. **PID.** PID is derived from point of origin, visual recognition, electronic support systems, non-cooperative target recognition techniques, IFF systems, or other physics-based ID techniques. Specific PID methods include:

(1) IFF modes (1-5 per the ATO/SPINS).

(2) Precise participant location and ID.

(3) A radar contact correlated with an authenticated/secure voice (position) report from an air or ground control agency.

(4) External/onboard CID systems (e.g., blue force tracker or non-cooperative target recognition).

(5) Visual ID.

c. **Procedural ID.** Procedural ID is based on adherence to airspace control measures and rules. ID is assumed to be friendly as long as rules are followed, but ID may be assumed hostile if rules are not followed and the suspect aircraft is not otherwise positively identified. Procedural ID separates airspace users by geography, altitude, heading, time, and/or maneuver (e.g., MRRs).

d. **Auto-ID Systems.** Some weapon systems have the capability to execute an auto-ID function (e.g., aircraft carrier auto-ID, Aegis-equipped ships, and Patriot missile systems). Use of auto-ID can reduce the workload (no man in the loop) and improve the timeliness of the ID process in an extremely dynamic/saturated AD environment, but it also can result in mistaken ID and friendly fire, engagement of noncombatants or civilians, or inadvertent protection for the enemy.

e. **Formation Assessment.** Applicable to both friendly and hostile formations, formation assessment is a procedural ID method used to apply the ID (from positive or procedural means) of one air track to other aircraft operating in mutual support as determined by their spatial relationship (e.g., "guilt by association"). The risk of friendly engagements and friendly protection to hostile aircraft is greater with formation assessment in effect, but to help mitigate this risk, care should be taken in the development of the spatial criteria used for the formation assessment.

f. **Formation Tracking.** Formation tracking is the use of a single data link air track (with a strength field indicating the number or estimated number of aerial vehicles comprising the formation) to represent a formation of two or more aerial vehicles. To qualify for formation tracking, the aircraft in the formation must maintain a consistent relationship with each other (horizontal and vertical separation, speed, and course).

13. Identification, Commit, and Engagement Authorities

a. In joint and MNF operations, subtle differences may exist in the processes and terminology used to authorize the employment of weapons. It is imperative that the command lines, engagement authorities, engagement procedures, ROE, and terminology be standardized, documented, clearly understood, and rehearsed (if possible) before an engagement decision is necessary.

b. **ID Authority.** The AADC will establish the policy for ID authority, with JFC approval, and will promulgate it via the AADP, SPINS, and/or an operations task link (OPTASKLINK) supplement. Execution of the ID policy is normally delegated to the tactical level, but care must be taken that the tactical commander is capable of performing the ID function in real time.

(1) The criteria for track classifications and the meanings of those classifications are approved by the JFC as part of the AADP, and any changes, especially those regarding ROE (e.g., meaning of hostile and engagement criteria), would be promulgated in the current SPINS and through ROE serial changes.

(2) Proper application of ID authority and classification may impact AMD units based on their assigned weapons control status (WCS) – free, tight, or hold.

c. **Commit Authority.** Commit authority may be used (and delegated) by the AADC as a battle management tool. The AD echelon with commit authority is permitted to authorize assets to **prepare to engage** an entity (e.g., position a DCA fighter to intercept or direct an ADA unit to track and target). **Commit authority does not imply engagement authority.** Further permission is required to engage an entity that has been committed upon.

d. **Engagement Authority.** Engagement authority is an authority vested with a JFC that may be delegated to a subordinate commander that permits an engagement decision. The AMD authority with engagement authority is permitted to authorize engagement of an air or missile threat. For AMD engagements within the theater, the authority is normally delegated to the AADC who may further delegate the engagement authority to tactical levels (e.g., RADC/SADC). The degree of delegation must be consistent with the ROE, the DAL, and the inherent right of self-defense.

e. Weapons release authority (WRA) is the authority originating from the President to engage or direct engagement of BM threats using the ground-based midcourse defense (GMD) system. WRA is unique to HD. The JFC is vested with authority to prosecute engagements within the theater/JOA consistent with ROE currently in effect.

f. If the unit with commit authority also holds engagement authority, the engagement decision is still separate and unique. As the conflict progresses, the JFC may approve delegation of commit authority down to the tactical level (e.g., RADC/SADC), but retain engagement authority with the AADC or the JFC to prevent inadvertent escalation by a lower-level command.

14. Combat Identification

a. CID is the process of attaining an accurate characterization of detected objects in the operational environment sufficient to support an engagement decision. The CID process uses all available PID methods to achieve the highest confidence possible for that decision, because it is normally one of the most critical decisions to be made. The CID process applies to all joint forces for both defensive and offensive actions.

b. The CID process is determined by the JFC (commonly in coordination with subordinate commanders), supported by the ROE, and may be situational dependent and/or time sensitive. CID allows the commander to balance the level of confidence in the ID method against the risk associated with an erroneous ID. While high confidence-low risk is always desired, the commander may face situations when the absence of PID requires procedural ID be used with a recognized increase in the risk of friendly fire or to misidentify an enemy (i.e., low confidence-high risk). This remains a commander's decision. For

example, during DCA operations against numerous simultaneous attacks by enemy aircraft and CMs, potentially with WMD, it may be necessary to accept lower confidence ID methods for hostiles and increased risk of friendly fire to minimize the risk of a "leaker" getting through to the target. Unambiguous lines of command and clarity of ROE are particularly important to the CID process, especially when delegating authority for engagement decisions during decentralized execution.

c. **ID Matrix.** The ID matrix is a logic tree for categorizing a track (e.g., friendly, hostile, unknown, or neutral) and following it throughout its life in the AOR/JOA. If not identified as friendly, an object being tracked may require further assessment based on position, the ROE, and WCS. WCS will be discussed in Chapter V, "Defensive Planning and Operations," paragraph 10.

For a detailed discussion of CID refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

15. Multinational Identification Considerations

Special attention must be paid to establishing a workable CID system during MNF operations. A mix of units with dissimilar capabilities and differing electronic systems, fire control doctrine, and training can present the AADC with an extremely difficult AMD situation. Advanced planning may be required to compensate for a "patchwork" of separate MNF CID capabilities, not just for the surface AD and air control units, but for their aircraft as well.

SECTION E. ASSET PROTECTION

16. General

a. Because there may not be enough defensive capabilities to defend everything within a theater, the JFC and staff, normally the plans directorate of a joint staff, develops a prioritized critical asset list (CAL) (see Figure III-1) for each phase of an operation with inputs from the components and based on the level of protection required to support tasks/missions assigned by the JFC. Within each general phase (e.g., seize initiative phase), subordinate JFCs or component commanders may establish additional phases that fit their CONOPS (e.g., phase I, deploy; phase II, forcible entry; phase III, defense; phase IV, offense) for which there may be separate CALs. The CAL maintained by a GCC's defense critical infrastructure program office may be useful in providing a preliminary baseline for JFCs for various operational scenarios within a JOA. The CAL should include designated assets and areas within the joint security areas (JSAs) of the JOA. Protection for JSAs outside the JOA, but within the AOR, normally remains the responsibility of the supported GCC. Protection of the lines of communication outside the AOR and vulnerable to enemy (or their ally's) air and missile attack must be coordinated with the responsible CCDRs by the supported GCC. **For DCA protection, the joint security coordinator designated by the JFC normally coordinates with the AADC to ensure the JSAs are appropriately covered by the AADP.** Usually, the number of assets requiring some level of AMD will be

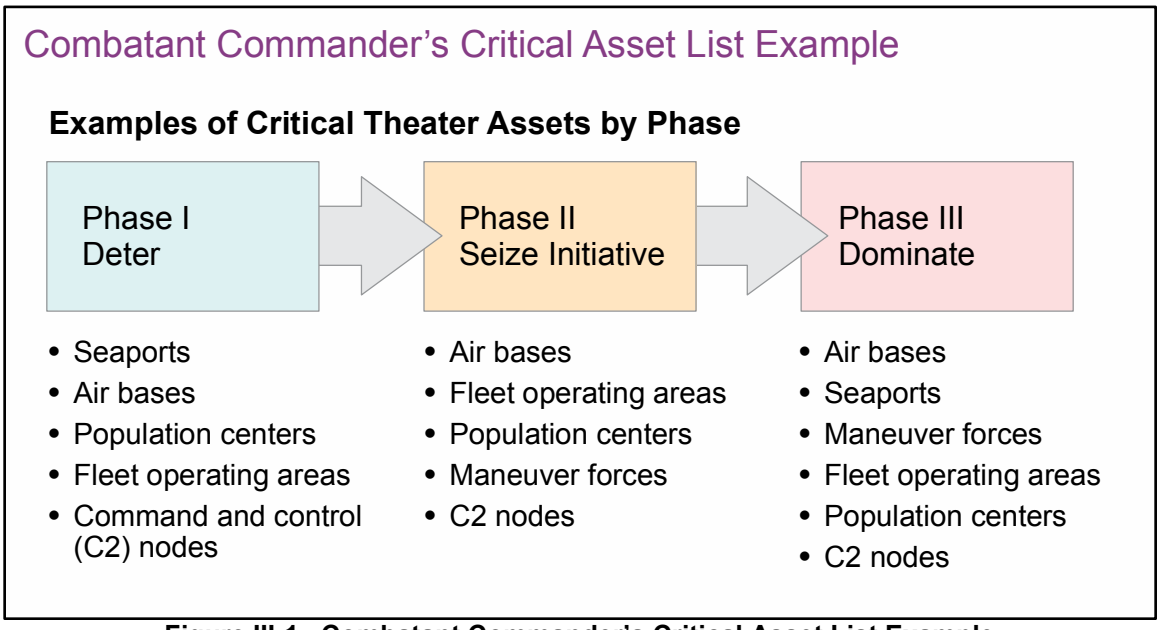

Figure III-1. Combatant Commander's Critical Asset List Example

greater than the resources available to defend them. Also, due to the dynamics of joint operations, priorities may change over the course of the operation or campaign.

b. The completed CAL is forwarded to the AADC, who will allocate available AMD capabilities to defend the prioritized assets listed as required. The most critical assets may require the layering of defenses to achieve an acceptable level of protection. The product of this effort is the DAL. **The DAL is a prioritized list of those assets on the CAL that are covered by JFC AMD capabilities.** After initial active AMD allocation, commanders should consider "clustering" to conserve AMD forces and assess if passive measures alone satisfy an assets' required defensive posture. If passive measures alone are insufficient to defend an asset on the DAL, the issue should be resolved by the JFC. **Once completed, the DAL is approved by the JFC.**

See JP 5-0, Joint Planning*, for additional details regarding plan phases.*

17. Critical Asset List Development

a. All assets nominated for the CAL are usually prioritized based on a methodology of assessing the three major factors of criticality-vulnerability-threat (CVT). The CVT process is objective and considers intelligence, air operations, ground combat operations, maritime operations, support operations, and HN considerations. Each asset is evaluated against defined criteria, and these criteria are weighed based on the consideration of the JFC's intent, CONOPS, and COG concerns.

b. **CAL Development Factors**

(1) **Criticality** is the degree to which an asset or area is essential to accomplishing the mission. It is determined by assessing the impact that damage to or destruction of the

asset will have on the success of the operation/campaign. Damage to an asset may **prevent, significantly delay,** or **have no impact** on success of the plan.

(2) **Vulnerability** consists of two parts: **susceptibility** (the degree an asset is susceptible to surveillance, attack, or damage) and **recoverability,** if attacked and damaged. Recoverability, once a factor itself, is now a subset of vulnerability and is the degree and ability to recover/reconstitute from inflicted damage in terms of time, equipment, and manpower and to continue the mission. Commanders should consider the time to replace personnel, equipment, or entire units, as well as whether other forces can perform the same mission. The following factors should be considered when assessing vulnerability:

(a) Survivability and cover (hardening).

(b) Camouflage, concealment, and deception.

(c) Mobility and dispersion.

(d) Ability to adequately defend itself from air/missile threats.

(3) **Threat.** Assess the probability an asset will be targeted for surveillance or attack by a credible/capable adversary. Determination of adversary intent and capability are key determinants of assessing the probability of attack. A thorough JIPOE oriented specifically on adversary air and missile capabilities is key to an accurate threat assessment. Examples include targeting information provided by intelligence estimates, past adversary surveillance and attack methods, and threat doctrine.

c. **High-Value Assets (HVAs).** HVAs are classified as friendly critical assets requiring protection. They may be any forces, facilities, or areas, etc., the friendly commander requires for the successful completion of the mission. They are categorized as follows:

(1) **High-Value Geopolitical Assets/Areas.** Those assets/areas so important that their loss could seriously impact the JFC's operation/campaign, destabilize a multinational coalition, or provide the adversary with a tremendous propaganda victory.

(2) **HVAA**

(a) HVAAs include all major airborne platforms for C2, intelligence collection, targeting, AR, and EW (e.g., AWACS, Rivet Joint, JSTARS, Compass Call, Cobra Ball, U-2, E-2, and EP-3). Depending on the defensive situation, other special mission aircraft may also be considered.

(b) Active protection for a HVAA is normally performed by fighter escorts, a fighter CAP between the HVAA and all potential air-to-air threats, or surface-based AD systems between the HVAA and the enemy.

(c) Passive protection includes positioning HVAA stations or orbits beyond SAM range and where an enemy interceptor attack can be detected in time to retrograde the HVAA out of harm's way.

(3) HVAs/Units

(a) Maritime assets include aircraft carriers, maritime pre-positioning ships, combat logistics force ships, and amphibious warfare ships conducting amphibious assaults and landings.

1. Active defense is normally provided by maritime AMD-capable systems (e.g., fleet AD assets) employing fighters, SAMs, close-in weapon systems, EW, and other self-defense systems in a layered defense.

2. Passive defense is accomplished by using the inherent mobility of naval forces, deception, EW, and operations security (OPSEC).

(b) Land assets include air and surface ports of embarkation and debarkation, major supply route checkpoints, early entry forces, operations centers, and logistical centers.

1. Active protection is provided by SAMs and fighters.

2. Passive defense is accomplished through the application of camouflage, concealment, deception, dispersal, hardening, and operating outside the range of enemy weapons.

(c) Critical enablers for AMD systems, such as radars, C2 nodes, and interceptor sites, may also require protection.

18. Defended Asset List Development

a. **Considerations.** The DAL is developed through the process of applying the CVT methodology, AMD resources, and defense design to the CAL while identifying the risk. It identifies the prioritized assets from the CAL to be provided with active defense resources. For prioritizing the DAL, the following are those considerations for levels of protection and levels of engagement effectiveness.

(1) **Levels of Protection.** A level of protection is an aggregated probability an asset will not suffer mission-critical damage from an air or missile attack. It encompasses all joint force capabilities used to defeat the air and missile threat. Levels of protection are assigned to each entry on the CAL list based upon the outcome of the CVT analysis.

(2) **Levels of Engagement Effectiveness.** The AADC normally implements the JFC-directed protection level for each defended asset on the DAL based on the threat types, capabilities and proximities, terrain and weather, support available/time available, and civil considerations. Implementation may include varied active and passive AMD measures, using multiple defensive layers, means, or engagement tactics to achieve the desired protection level. After levels are established, the defense design with defensive assignments and tactics is developed. The AADC should recommend OCA attack operations against the anticipated threats when an asset cannot be adequately defended from an attack due to the threat composition, strength, or proximity.

b. The DAL must be continuously assessed, especially in a dynamic, multi-phased campaign. The AADC normally delegates further assessment of the DAL to a working group/coordination board with appropriate staff and component representation (e.g., a DAL reprioritization board or DAL synchronization board). The assessment and recommended adjustments to the DAL are presented to the AADC for concurrence and forwarding to the JFC for final approval. Changes to the DAL should be anticipated with changes in phase of an operation/campaign due to changes in the priority of defended assets by phase, loss of AMD assets, inventory depletion, or the arrival of additional AMD forces. Normally, the DAADC will chair the working group/board for assessing the DAL for changes.

See ATP 3-01.94, Army Air and Missile Defense Command Operations*, and ATP 3-01.15 [FM 3-01.15]/MCTP 10-10B [MCRP 3-25E]/NTTP 3-01.8/AFTTP 3-2.31,* Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System, *for detailed discussion of CAL and DAL.*

SECTION F. ENABLING CAPABILITIES

19. Special Operations

SOF core activities should be considered when planning counterair operations. SOF can aid counterair operations by providing information or by destroying or disrupting air and missile assets, bases, logistic sites, and C2 facilities. For example, SOF can locate enemy assets (especially those being concealed/camouflaged) behind the lines, provide terminal guidance (e.g., laser target designation) for joint air attacks, and provide post-attack assessment. They may be used for OCA operations, but they are not a recognized DCA asset. To ensure proper ID and reduce the potential for friendly fire, SOF liaisons must ensure proper procedures are in place for CID of SOF teams and aircraft during cross-border operations or those considered behind enemy lines or in enemy rear areas. Often special liaison or trusted agents will coordinate/facilitate SOF movements, including using coordination measures for activation of joint special operations areas or restricted fire areas.

For more detailed information on SOF, refer to JP 3-05, Special Operations.

20. Commander's Communication Synchronization

a. Counterair operations are most effective when they are conducted from a position of information superiority. This enables disruption of enemy strike-planning and execution functions as well as the enemy's ability to collect and process information. The commander's communication synchronization process can provide direction and deconfliction of capabilities against OCA target sets such as C2 systems, AD nodes, missile sites, and airfields/operating bases. The joint force employs IRCs to affect the information provided to or disseminated from the target audience to affect decision making. Adversary information vulnerabilities related to their offensive and defensive air and missile systems should be identified as early as possible in the planning process. Denying the adversary knowledge of friendly counterair capabilities and their locations is integral to effective counterair operations and is achieved via the full range of IRCs, such as control of the EMS, OPSEC, military deception, and key leader engagements.

b. IRCs can be employed offensively to degrade the adversary's situational awareness and their decision-making processes, disrupt vital AD information transmissions and their capability to synchronize AMDs, disrupt their ability to coordinate attacks, and deny them reconnaissance and surveillance capabilities. It is not the ownership of the IRC and techniques that is important, but rather their integrated application in order to achieve a JFC's objective. Military deception can be used to lead the adversary into making erroneous decisions and wasting resources, or to mask friendly force intentions.

For more information, see JP 3-13, Information Operations.

21. Electronic Warfare

a. EW is an enabling capability for countering air and missile threats. In addition to the defensive electronic attack (EA) function to deny targeting and to defeat inbound threats through jamming and decoying/deception, EW sensors provide warning intelligence, tracking, and ID while its electronic protection function supports counterair systems' abilities to employ capabilities within the EMS.

b. EW is normally a multifaceted, very scarce capability. EW aircraft are especially heavily tasked to support a myriad of joint missions. **An electronic warfare cell (EWC), or its functional equivalent, is required within the JAOC to coordinate requirements, integrate EW with EMS operations (e.g., sensing, communications), set priorities for EW assets, and take advantage of reachback capabilities within the reprogramming centers that support specialized and self-protection EW systems.**

c. The development and updating of the joint restricted frequency list (JRFL) is critical to successful counterair operations because of the EW and communications implications. All joint operations require a JRFL to identify and deconflict/synchronize friendly force use of frequencies. This list is a critical tool in the management of the use of the EMS, and it specifies protected frequencies that should not be disrupted either because of friendly use or friendly exploitation. The JRFL is maintained and promulgated by the communications system directorate of a joint staff through the joint frequency management office (JFMO) in coordination with the J-2, J-3, and the JFC's EW staff; an EWC; or a joint electromagnetic spectrum operations cell, if delegated. The JFMO must manage all frequencies used by the joint force. For defensive purposes, the JRFL is a means of preventing radio frequency interference among friendly users. Frequency deconfliction through the use of the JRFL is also a key to a successful coordinated defense against enemy C2-attack operations. The JRFL is constantly being modified, and a daily EW deconfliction message is normally used to protect frequencies from jamming or other forms of manipulation. Experience has shown that during intense SEAD operations, friendly forces have been erroneously attacked because their electronic emitters were not recognized as friendly; thus, EW planners must not only know what frequencies to protect from enemy action, but also what frequencies to protect from friendly effects.

For more details regarding the JFRL and JFMO and in-depth discussion on EW, see JP 3-13.1, Electronic Warfare.

22. Cyberspace Operations

CO are the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace. Cyberspace is a global domain within the information environment consisting of the interdependent network of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers. The detection of malicious cyberspace activity targeted against friendly AMD systems may provide indications of impending air and missile attacks.

a. **Offensive cyberspace operations (OCO)** consists of the activities that project power by the application of force in and through cyberspace. OCO supports offensive and defensive efforts to counter air and missile threats, by preventing launches, disrupting timing, and minimizing damage/impact. OCO supports OCA attack operations/SEAD and DCA (active and passive AMD), among other missions. OCO will be authorized, as are other operations, through an EXORD. Effective OCO requires deconfliction with other operations in cyberspace and the physical domains.

b. **Defensive cyberspace operations (DCO)** are passive and active CO intended to preserve the ability to utilize friendly cyberspace capabilities and protect data, networks, net-centric capabilities, and other designated systems. DCO internal defensive measures include mission assurance actions to dynamically reestablish, re-secure, reroute, reconstitute, or isolate degraded or compromised local networks to ensure sufficient cyberspace access for JFC forces. DCO supports AMD by protecting friendly AMD systems from compromise in cyberspace.

c. Department of Defense information network (DODIN) operations support sensor to shooter connectivity. This includes proactive actions that address the entire DODIN, such as configuration control and patching, cybersecurity measures and user training, physical security and secure architecture design, operation of host-based security systems and firewalls, and encryption of data.

For more information on CO, see JP 3-12, Cyberspace Operations.

23. Space Operations

a. The enabling capabilities that space operations bring to the joint force are significant for countering air and missile threats. Space systems provide BM launch warnings and attack assessments; sensor cueing; launch locations; predicted headings and impact areas; global and theater-/JOA-wide communications; current and forecast weather information; space-based ISR; position, navigation, and timing (for joint forces, allies, and precision munitions); and theater-/JOA-wide ID/CID systems support. Space assets may also be used to facilitate emission control and jamming/spoofing when conducting SEAD missions.

b. The JFC normally designates a lower-echelon commander as the SCA to serve as the focal point to coordinate user requirements for space support with USSTRATCOM. Each GCC has a network of space operators resident on staffs at multiple echelons. Their primary purpose is to serve as theater advisors for space systems (national, civil, commercial,

military, and foreign) and to integrate space capabilities into joint force planning and employment. These individuals concentrate primarily on working the detailed activities of theater space operations.

c. **Missile Warning.** BMD is greatly enabled by persistent and reliable warning intelligence. The two missile warning missions are strategic and theater; both use a mix of space-based and terrestrial sensors. Space-based and ground-based systems are crucial for timely detection and communicating warning of nuclear detonations or adversary use of BMs against US forces and allies. Tactical warning is a notification to C2 centers that a specific threat event is occurring or has occurred. Attack assessment is an evaluation of information to determine the potential or actual nature and objectives of an attack for the purpose of providing information for timely decisions.

(1) **Strategic Missile Warning.** Strategic missile warning is the notification to national leaders of a missile attack against North America or allied and partner nations. Integrated tactical warning and attack assessment systems are essential for the execution of strategic missile warning for attacks on the US and Canada.

(2) **Theater Missile Warning.** Theater missile warning is the NRT notification to operational command centers and the warfighter of a potential threat of a missile event launched from, overflying, or projected to impact a designated AOR, JOA, and/or area of interest.

d. **Shared Early Warning (SEW).** The US exchanges missile detection and warning information with its allies and partner nations. SEW is the continuous exchange of information derived from US missile early warning sensors and the sensors of the SEW partner, when available. Information on missile launches is provided on an NRT basis. This information can take the form of data, voice warning, or both. The objective of SEW is to enhance regional stability by providing theater BM warning to GCCs, sponsored partner nations, and North Atlantic Treaty Organization allies.

For more information on space operations, see JP 3-14, Space Operations.

24. Intelligence, Surveillance, and Reconnaissance

a. Situational awareness relies on the intelligence function and the associated processing, exploitation, and dissemination (PED) capabilities. As a group, ISR platforms with multi-intelligence capabilities provide the most accurate picture of the adversary. Many ISR assets are scarce and may be high-demand/low-density assets and require careful planning for their utilization. ISR platforms and their associated PED capabilities must be apportioned early to ensure they are allocated and available for tasking before hostilities commence.

b. The backbone of ISR capabilities is a theater ISR CONOPS based on a coherent collection strategy that fully integrates and optimizes the layered, cross-cued use of all organic, multinational, commercial, and requested national or interagency ISR assets. The capabilities include both periodic reconnaissance and continuous surveillance of the operational area. While some of the information requires processing for intelligence, the

information from other producers can be directly linked to commanders and OCA or DCA forces as required. This is especially helpful for time-sensitive targeting and decision making. Depending on the capabilities of the sensor and surveillance systems and the source and quality of the intelligence, cueing of additional systems may be necessary to provide more refined adversary air and missile threat data to facilitate accurate target development and threat assessment. National or theater sensor and surveillance assets may be able to detect, footprint, or search areas that will then require more refined ISR activities by theater and tactical assets. Friendly aerial reconnaissance, ground surveillance systems, and other intelligence assets requiring cueing are focused rapidly to achieve the necessary accuracy for IPB targeting objectives.

c. The JFACC is normally responsible for airborne ISR for the JFC, and the JAOC has an ISR division for planning and execution. The GCC is responsible for theater-level ISR, to include ISR support to the subordinate JFC and component commanders. Typically, the GCC manages ISR operations and ISR collection management via the joint collection management board, co-chaired by the CCMD J-2 and J-3 directors. At the national and the DOD levels, the Joint Staff identifies, develops, and recommends sourcing solutions for DOD ISR and associated PED capabilities to satisfy CCMD operational and intelligence requirements while synchronizing operational ISR plans and allocation strategies to integrate national and theater capabilities.

Refer to JP 2-01, Joint and National Intelligence Support to Military Operations*, and JP 2-03,* Geospatial Intelligence in Joint Operations*, for more details regarding ISR.*

25. Air Refueling

a. AR is an important force multiplier and enabling function for counterair and joint air operations. AR greatly increases the range, endurance, and payloads of aircraft conducting counterair and other joint air operations.

b. During a combat operation, the highest priority for intra-theater AR units is normally supporting combat and combat support aircraft executing joint air operations. This is especially true during the initial phases of a conflict. Theater AR assets bolster the security of air assets by allowing them to be based beyond the range of enemy threats. AR increases the endurance of airborne C2 assets (e.g., AWACS, JSTARS) used to help manage, direct, and conduct combat operations. Depending upon the operation, extending range or endurance could reduce the number of sorties required, decrease ground support requirements at forward locations, and may reduce the number of aircraft required to be deployed to a theater.

c. AR not only allows combat aircraft to greatly extend their range of operation (which may allow them to operate from bases further away from the conflict that may be more secure and have existing infrastructure and logistic capabilities that are critical to military operations) and endurance (making possible longer "on-station" times, thereby decreasing the number of aircraft needed to meet objectives), but may also allow some types of aircraft to carry a larger payload on initial takeoff by decreasing the amount of onboard fuel required. **A lack of airspace for AR tracks can limit the number of sorties the**

JFACC/AADC is able to schedule and execute. AR support is important for both DCA and OCA.

Refer to JP 3-17, Air Mobility Operations*, for more details regarding AR operations.*

SECTION G. GENERAL GLOBAL PLANNING CONSIDERATIONS

26. Global Missile Defense Planning

a. Per the UCP, CDRUSSTRATCOM synchronizes planning for global MD in coordination with other CCDRs, the Services, and as directed with appropriate USG departments and agencies.

b. Global MD requires a collaborative process that provides GCCs with the ability to coordinate cross-AOR MD in multiple theaters. BMD planning, in particular, can be complex and therefore requires a well-trained core group of BMD planners to integrate and synchronize diverse BMD units and systems from multiple components and CCMDs supporting each other. While such a planning process is designed to mitigate risks associated with BM threats, it also enhances a GCC's ability to employ forces and capabilities within their AOR in support of another GCC. Planners balance competing requirements for scarce resources and those categorized as high-demand/low-density strategic resources.

c. Global planning activities identify potential areas of risk to GCC and JFC operations. Any consideration of BMD resources and shared airspace should account for the fact that BMD resources are integral to the theater counterair mission when the JFC requires a desired degree of control of the air to accomplish an assigned mission. Some BMD resources are multi-mission platforms, such as BMD-capable ships, that may also be required for air, strike, anti-surface, or antisubmarine warfare tasking in support of the JFC's CONOPS. In addition to producing planning products, planning activities serve to identify capability shortfalls and explore materiel and nonmateriel solutions to mitigate vulnerabilities in the protection of the homeland, deployed US forces, allies, and friends.

d. Planning for global MD should include coordination of launch warnings, offensive operations that support a BMD strategy, plan assessment metrics, allied/partner integration, GFM, and C2 of BMD operations. Gaps and seams between AOR boundaries and between forces in different AORs can be areas of risk. Procedures for distribution and control of fires between AORs should be addressed during planning. Collaborative planning efforts should produce recommendations to mitigate operational gaps and vulnerabilities associated with missile threats.

e. **Global MD Planning Principles.** Successful global MD planning is based on the following principles:

(1) **Unity of Command.** GCCs are supported commanders for all BMD in their respective AORs. Due to speed, range, and the potential for cross-AOR missile threats, GCCs may simultaneously be supported and supporting for BMD. However, the unique requirements of BMD C2 relationships do not affect unity of command. For example, forces

assigned to Commander, United States Central Command (CDRUSCENTCOM), supporting MD operations in the Commander, US European Command's AOR, normally would remain under the command of CDRUSCENTCOM.

(2) **Unity of Effort.** A GCC must coordinate MD with other CCDRs and with multinational partners to ensure unity of effort. BMD can be conducted simultaneously within a single AOR and across multiple AORs requiring intratheater and intertheater integration and coordination of capabilities to optimize engagement opportunities. Integrating a full array of offensive options with active and passive MD measures is essential to establishing and sustaining deterrence and defense against missile attack of the homeland, forward deployed troops, allies, and partners.

(3) **Centralized Planning.** USSTRATCOM will lead collaborative, centralized global MD planning efforts to ensure gaps and vulnerabilities are mitigated in cross-AOR planning. Global collaborative planning enables the coordination and integration of all MD capabilities. Because BMs can rapidly cross AOR boundaries, the joint force must integrate layered MD forces and resources across multiple commands to establish an effective defense in depth. Planned responses and pre-coordinated engagement criteria between GCCs support the prompt, decisive engagement of missile threats.

(4) **Decentralized Execution.** MD forces and resources are under the control of the JFC to whom they are assigned or attached. Tasking and engagement authority will be delegated to the lowest practical level consistent with the ROE, the DAL, the AADP, and the authority of the JFC. The process and means of ordering engagements will be clearly stated in AADPs, ACOs, and SPINS, or other orders. Engagement coordination requires the ability to plan global MD resources to optimize the operational environment and decision timelines; identify and track multiple, simultaneous missile threats; and direct engagement against multiple BM threats. To optimize decentralized execution of BMD engagement opportunities, it is essential to have clear policy guidance, shared situational awareness, minimal system latency, and the capability to synchronize efforts across AORs. The one exception to decentralized execution of BMD is for homeland BMD, using the GMD system, which requires positive direction from the WRA delegated from the President.

f. **Additional Global MD Planning Considerations**

(1) **Support Relationships.** Directives that establish a support relationship for global MD must include the forces and resources allocated to the supporting effort. This includes the time, place, level, and duration of the supporting effort; the relative priority of the supporting effort; the authority, if any, of the supporting commander to modify the supporting effort in the event of an exceptional opportunity or an emergency; and the degree of authority granted to the supported commander over the supporting effort.

(2) **International Law.** Due to the short engagement timelines and the vulnerability of communications between nations, tasking and engagement authorities for MNFs and resources conducting global MD must be planned and take into account individual national interpretations of international law and constitutional limitations. Planners must also recognize that each nation in a coalition or alliance may invoke separate,

legal, and political obligations to third parties through treaties, alliances, and other such bilateral or multilateral agreements. DOD forces will adhere to the law of war during all military operations.

(3) **Collateral Effects.** Two key planning considerations are minimizing the collateral effects of MD-supporting offensive strikes and defensive measures to minimize the effects of hostile missile attacks. In principle, priority should be given to actions that save the most lives. Despite the effects of missed and successful intercepts, which may affect third party nations as well as the combatant states, defense effectiveness should take primacy over debris mitigation, as the consequences of not intercepting will likely outweigh debris damage. Response actions to the collateral effects of MD employment may include responding to personal injury; property loss; terrestrial cleanup resulting from MD engagements; high-altitude electromagnetic pulse (EMP); and/or chemical, biological, radiological, and nuclear (CBRN) debris. The coordination of information between organizations planning MD and potential first responders is essential.

For additional information regarding CBRN hazards, see JP 3-11, Operations in Chemical, Biological, Radiological, and Nuclear Environments, *and regarding CBRN response, see JP 3-41,* Chemical, Biological, Radiological, and Nuclear Response.

(4) **Global Prioritized Defended Asset List (PDAL).** The Global PDAL is a prioritized listing of defended assets developed from the GCCs' PDALs. It prioritizes these assets based on CCMD assessments using a common CVT methodology. The purpose of the Global PDAL is to balance risk to mission with risk to force and to inform recommendations for rotational and emergent force allocation and assignment. It does not replace the CCDR's assessment, nor does it leave defended assets unprotected or reallocate CCDR's resources within regional AORs. The Global PDAL provides an objective approach to inform senior leaders of regional MD priorities and the potential impact of GFM decisions and to provide an illustrative assessment of risk associated with force constraints when resourcing decisions are made.

(5) **BMD COMNET.** Global MD is supported by communications comprised of the infrastructure that physically connects strategic and regional MD assets in support of operational and/or research, development, test, and evaluation activities. The main COMNET used by global MD is the BMD COMNET. This network may be comprised of numerous distinct communications systems including, but not limited to, military and commercial satellite communications and Defense Information System Agency-provisioned terrestrial services. The BMD COMNET includes the GMD Communications Network; the Command and Control, Battle Management, and Communications system; and the Ballistic Missile Defense System Communication Network.

Refer to Chapter V, "Defensive Planning and Operations," for more details regarding global MD planning processes and bodies, considerations, and principles.

CHAPTER IV
OFFENSIVE PLANNING AND OPERATIONS

"After all, the great defense against aerial menace is to attack the enemy's aircraft as near as possible to their point of departure."

Winston Churchill
Memo of 5 September 1914

1. General

Offensive planning and operations to counter air and missile threats encompass theater, global, and homeland dimensions. Within the theater, OCA operations normally have a high priority as long as the enemy has the air and missile capability to threaten friendly forces and the JFC does not have air superiority to achieve the objectives required to attain the end state. Offensive operations reduce the risk of air and missile attacks, allowing friendly forces to focus on their mission objectives. **The preferred method of countering air and missile threats is to destroy or disrupt them prior to launch** using offensive operations.

SECTION A. OFFENSIVE COUNTERAIR PLANNING

2. General

a. OCA is offensive operations to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, and as close to their source as possible. OCA planning begins with JIPOE and IPB and considers the commander's assessment of the overall air and missile threat, the predicted effectiveness of the defense design, target database, ROE, objectives, priorities, missions, available friendly capabilities, and the weight of effort or force apportionment decision. IPB enhances the commander's ability to find targets, task attack forces, and assess their effectiveness. Considerations include the enemy's air and missile operating areas, signatures, capabilities, and deployment and employment procedures. IPB attempts to provide a comprehensive picture of the enemy activity, terrain, and weather within the theater/JOA and generally requires planning for surveillance and reconnaissance in support of intelligence collection.

b. Through centralized planning and direction, the JFACC synchronizes OCA operations with DCA and other joint operations and relies on robust C2 systems for decentralized execution. Decentralized execution allows components and units to exercise initiative, responsiveness, and flexibility within their command authorities to accomplish their tasks. Operations against fixed targets require emphasis on preplanning, accurate and timely intelligence, target selection, time over target, and published ROE. OCA operations against mobile targets or TSTs (e.g., SAMs, BM or CM launchers) also require preplanned procedures that can be implemented or modified quickly to assign the optimum weapon system relying on integrated C2 systems for as close to real time control as possible. This emphasis on planning enhances mission effectiveness while minimizing potential for friendly fire and interference with other operations.

c. Reliable and secure C2 systems are needed to ensure timely and accurate integration, planning, responsiveness, and close coordination. **These systems represent the collective threads that tie all joint forces together, and those C2 systems must be aggressively protected from enemy interference.**

d. Planning should include the use of longer range attack operations (such as global strike) against deep threats. These should be included in planning contingencies developed under the collaborative planning process with other CCDRs.

3. Offensive Counterair and the Joint Air Operations Plan

a. Since the preponderance of OCA operations are conducted with joint air forces/capabilities that are integrated in action through the JAOP, OCA planning is an integral part of this overall joint air operations planning. The air estimate process has six phases that result in the JAOP. While the phases are presented in sequential order, they can be worked either concurrently or sequentially. The phases are integrated and the products of each phase are checked and verified for coherence. Figure IV-1 lists the six phases. The following explains the process in regards to OCA planning, not to each JAOP phase.

(1) The process begins with mission analysis (i.e., analyzing the JFC's guidance, the situation, resources, and risks involved). Mission analysis provides the data that is used to answer the essential questions about an operation. The JFACC uses the mission analysis to produce air objectives that support the JFC's objectives. In general terms, the focus of OCA is to attain and maintain the JFC's goal of air superiority in the operational area. This requires that both an enemy's offensive and defensive air and missile capability be made combat ineffective to some degree. **Specific OCA objectives and desired effects must be clearly defined and measurable so the JFACC can assess whether or not OCA operations are achieving the objectives while avoiding undesired effects.**

(2) After establishing OCA objectives, the JFACC uses the data from the mission analysis to examine resources and risks, as well as enemy COA (both known and anticipated), to arrive at the best option for integrating OCA into the JFACC's COA for joint air operations.

(3) The JFACC's COA is approved or amended by the JFC and translated into the final JAOP that includes details on the integration of OCA into the overall air operations plan. The JAOP identifies objectives by priority order, describing in what order they should be attacked or otherwise neutralized, the desired effects, and the weight of effort required to create them. For OCA operations, the JAOP accounts for current and potential offensive and defensive threats and indicates the phasing of joint air operations. The results of the planning process are also incorporated into the daily master air attack plan (MAAP).

(4) The MAAP forms the basis of the daily ATO. During MAAP development, OCA resources are allocated to accomplish specific tasks. OCA planning considers the operational context and environment and the results from current operations. Planners will work with specialty teams, component liaisons, and unit representatives, incorporating and synchronizing OCA aspects of the air operations directive, joint prioritized integrated target

Joint Air Estimate Process

Mission Analysis

Intelligence preparation of the battlespace (IPB) is initiated. Phase focuses on analyzing the joint force commander's guidance.

Situation and Course of Action (COA) Development

IPB is refined to include adversary COAs. Adversary and friendly centers of gravity are analyzed. Multiple air COAs or one air COA with significant branches and sequels are developed.

COA Analysis

Friendly COAs are wargamed against adversary COAs.

COA Comparison

Wargaming results are used to compare COAs against predetermined criteria.

COA Selection

Decision brief to joint force air component commander (JFACC) with COA recommendation. JFACC selects COA.

Joint Air Operations Plan (JAOP) Development

Selected COA is developed into a JAOP.

Figure IV-1. Joint Air Estimate Process

list, threat situation, joint prioritized collection, forecast weather, weapons system availability, AR, and weapons employment options. The MAAP has sufficient flexibility to adapt to the changing situation throughout the theater/JOA. Planners adjust to the changing availability of joint assets to ensure each task or target is assigned the best available capability.

b. OCA planning includes targeting enemy air and missile threats, C2, and supporting infrastructure. Targeting is the process of selecting targets and matching the appropriate response to them, accounting for operational requirements and capabilities. The following seven criteria are normally used to establish targets and their priorities:

(1) Objective—the degree to which targets contribute to the OCA objectives.

(2) Threat—determining the need and urgency to counter the threat posed by the target.

(3) Expected Effect—the degree the enemy capability can reasonably be expected to be affected by a successful action.

(4) Delay in Effect—the time between the initial engagement and the desired effect.

(5) Risk Calculation—the probable risk to attacking forces.

(6) Forces Available—the composition of forces required to achieve the desired results.

(7) Assessment—the ability to determine the effect of an attack on enemy capability.

Refer to JP 3-60, Joint Targeting*, for a detailed discussion of the targeting process.*

c. OCA targets should be attacked on the surface prior to launch, or, if not on the surface, as close to their source as possible. However, based on the JFC's priorities and ROE, many mobile targets, especially TSTs, may be sought and attacked wherever and whenever they are found. Target ID and planning should start prior to hostilities, but target data should be as current as the latest intelligence. Target defenses, to include active and passive systems, should also be evaluated to determine vulnerability.

d. Commanders should consider the following targets for OCA operations:

(1) **WMD.** The engagement of targets involved with the storage and delivery of WMD presents the JFC with significant and unique challenges. When tackling these challenges, the JFC must consider targeting priorities, reviewing and revising existing ROE where needed, and developing clear guidance for WMD targeting. When planning OCA against WMD targets, risk assessments should consider the unique nature of the collateral damage. Escalation concerns may place some enemy WMD and delivery capabilities on the restricted target or no-strike lists. Engaging WMD targets or targets adjacent to WMD facilities requires a sound understanding of collateral effects arising from a WMD release. Commanders should have a trained planner on their staff to ensure proper strike planning against or near WMD targets.

See JP 3-40, Countering Weapons of Mass Destruction*, for further guidance on countering WMD planning.*

(2) **Missiles and Support Infrastructure.** OCA operations against missiles are most effective prior to their launch/dispersal. The destruction of missiles, launch facilities, storage facilities, and other support infrastructure greatly limits subsequent missile attacks. OCA assets may also be rapidly re-tasked to destroy TSTs such as mobile launchers.

(3) **Airfields and Operating Bases.** Destruction of hangars, shelters, maintenance facilities, and other storage areas, as well as petroleum, oils, and lubricants, will reduce the enemy's capability to generate aircraft sorties. Runway or taxiway closures often prevent use of the airfield for short periods, thus preventing subsequent takeoffs and forcing returning aircraft to more vulnerable or distant locations. Direct attacks on crew and maintenance personnel and facilities may reduce sortie generation rates longer than attacks on the infrastructure of airfields and operating bases.

(4) **Aircraft.** Target aircraft include enemy fixed-wing and rotary-wing aircraft (manned or unmanned), whether in flight or on the ground. Destruction of these targets will limit enemy attacks, surveillance/targeting, and defensive capabilities. Destruction of the control station or the UAS command link can also be effective in defeating the UA.

IRAQI INTEGRATED AIR DEFENSE SYSTEM DURING DESERT STORM

"The underlying principle of the suppression of enemy air defense (SEAD) plan was to attack KARI [nickname for Iraqi integrated air defense system] as a whole. It would not be necessary to kill all the surface-to-air missile (SAM) sites; it would be enough, if the coalition SEAD assets intimidated the Iraqis to the point that those running SAM sites would refrain from turning radar on. Finally, the plan to suppress enemy air defenses aimed to defeat the SAM threat, so that allied aircraft could operate at medium altitudes which would minimize the threat posed by Iraqi antiaircraft artillery. In effect, planners looked to maximize the inherent inefficiencies and frictions within KARI. They believed that the Iraqis could not operate effectively without centralized direction; once the system began to break down at the center, it would no longer function at all."

SOURCE: The Gulf War Air Power Survey, Volume II

(5) **C2 Systems.** C2 systems are critical to the employment of forces and should be given a high priority during OCA operations. The desired effect may be to take away the enemy's C2 capability while retaining the ability to reconstitute it after the conflict. C2 systems include intelligence gathering, warning and control systems (e.g., UA control sites, GCI sites, early warning and acquisition radars, and other sensors), as well as their supporting facilities (e.g., electrical power grid). Fixed-site, hardened facilities are usually easier to locate than mobile systems. Attacks against fixed sites can also be preplanned with appropriate weapons to increase the probability of kill. The timing of attacks against C2 systems can be critical to supporting the JFACC's overall effort to achieve air superiority for a given time window. Attacks should also be considered against airborne, maritime, and mobile ground-based C2 platforms, as well as against systems supporting space-based platforms. CO and EW capabilities should be integrated into OCA planning.

(6) **Naval Platforms.** Enemy naval platforms capable of employing aircraft, long-range SAMs, or missiles are also important OCA targets. Targeting of these platforms limits the enemy's ability to conduct air and missile attacks in the littoral or possibly influence vital sea lines of communications.

(7) **AD Systems and Enemy Forces.** Disruption or destruction of enemy AD systems and the personnel who control, maintain, and operate them significantly limit enemy self-defense efforts.

4. Offensive Counterair Assets and Supporting Capabilities

a. The effectiveness of OCA operations depends on the availability and capabilities of friendly assets. The choice of a particular weapon system or capability may depend upon the situation, target characteristics, desired effects, threats, weather, and available intelligence. Whenever possible and within the ROE, commanders should employ weapon systems that minimize the risk to friendly forces, noncombatants, and civilians.

b. **Aircraft.** Aircraft provide the advantages of air-refuelable manned systems (flexibility of control), night and all-weather capability, long ranges, tailorable weapons loads, and precision weapons; additionally, most are capable of self-defense. Aircraft used for OCA operations include bombers, air-to-air fighters, fighter-attack, EW aircraft, and fighters especially configured for SEAD. Additionally, there are airborne early warning, tactical air control C2, reconnaissance, aerial tankers, special operations, and airlift aircraft that directly support the offensive aircraft or other forces capable of OCA operations.

c. **UA.** UA can be used for attacks, surveillance, reconnaissance, deception, jamming, and decoy of enemy forces and AD systems. UA are preprogrammed or remotely piloted and often provide intelligence to friendly forces while providing confusing and erroneous information to the enemy. Some UA are night-capable and carry precision guided weapons. UA may cause the enemy to expend weapons and other AD resources to evaluate or attack them. Airspace control is an especially important planning consideration when mixing UA and manned aircraft in close proximity.

d. **Missiles.** Missiles that may be used for OCA include surface-to-surface, air-to-surface, and air-to-air guided missiles, as well as air-, ground-, and sea-launched CMs.

e. **SOF.** SOF conduct direct action, provide terminal guidance, observe attacks, and collect information through special reconnaissance. SOF may strike enemy targets that are normally beyond the capability of other conventional munitions. Examples include targets concealed by difficult terrain, underground facilities, or "safe haven" targets. SOF may also be used to locate, positively identify, and designate targets for other forces. Coordination with the SOLE at the JAOC is critical to synchronize/deconflict operations and avoid friendly fire for SOF working behind the lines and/or in the land/maritime AO.

f. **Surface Fire Support.** Artillery and naval surface fire support may be used during offensive operations if enemy targets are within range. Surface fire may provide the safest and fastest method of attacking targets.

g. **Antisubmarine Warfare Forces.** Sea- and land-based antisubmarine warfare capabilities may be employed against enemy CM and BM submarines, based on approved ROE. Employment is dependent upon whether the enemy presents an operational threat and the commander's desires regarding conflict escalation.

h. **Armed Helicopters.** When apportioned by the JFC and made available for tasking, these assets may be placed in direct support of the JFACC with mission-type orders for attack operations. Attack helicopters are considered maneuver units of the land forces.

i. **C2 Systems.** C2 support for OCA includes early warning and surveillance systems; radars; ID/CID systems; communications systems; and other surface-based, air-based, and space-based sensors. These systems provide warning, intelligence, targeting data, and C2.

j. **IRC Activities.** IRCs can generate the desired effects that have proven to be essential to OCA operations. Their employment can save valuable aircraft sorties during a high-tempo air war. Many OCA targets, such as C2 nodes, missiles, and support infrastructure, and airfields/operating bases can be affected by the employment of IRCs. CO supports OCA

through the use of OCO to affect enemy air and missile systems during their engagement sequence. Using OCO in OCA attack operations and SEAD requires sufficient planning as OCO involves a complex process for employment that must be completely synchronized and integrated with fires and with friendly movements and activities.

k. **Marine Reconnaissance.** Marine reconnaissance can conduct direct action, provide terminal guidance, observe attacks, and collect intelligence information through special reconnaissance. Marine reconnaissance may strike enemy targets that are normally beyond the capability of other conventional munitions. Examples include targets concealed by difficult terrain, underground facilities, or "safe haven" targets. Marine reconnaissance may also be used to locate, positively identify, and designate targets for other forces.

5. Enemy Integrated Air Defense Systems

a. Enemy ADs may range from autonomous AAA to advanced, integrated capabilities. An enemy IADS could include detection, C2, and weapon systems integrated to protect those assets critical to achieving their strategic, operational, and tactical objectives. An enemy IADS attempts to destroy, disrupt, or neutralize intelligence collection and air and missile attacks or other penetrations of their airspace. To degrade the effectiveness of OCA operations, enemy defensive tactics may include jamming aircraft navigation, communications, target acquisition systems, and precision weapons guidance systems. Enemy IADS have become increasingly complex and can differ widely in terms of organization, sophistication, and operational procedures. For targeting, enemy IADS need to be analyzed in depth to neutralize or avoid enemy strengths and exploit enemy weaknesses.

b. **C2.** Traditionally, many adversaries exercise rigid, centralized control over AD activities. AD commanders located in centralized C2 posts provide warning and cueing, assign targets, and control weapons readiness using overlapping and redundant communication links. However, some adversaries may employ a decentralized system where multiple nodes may have the redundancy to direct the entire IADS. Radio-based C2 is now being supplemented by combinations of communications over landline (cable/fiber optics), microwave, cellular, satellite, and Internet systems.

c. **Employment.** Mobile AD elements allow forces to echelon in depth and include tactical and strategic SAM and AAA systems. Technologies are now available that allow passive detection with little warning prior to weapon engagements. Known adversaries are adept at camouflage, concealment, and deception, complicating the targeting process. SAM forces have become more mobile and lethal, with some systems demonstrating a "shoot-and-move" time in minutes rather than hours or days. Modern SAM systems have been dramatically improved in both range and capability and some older systems have received substantial upgrades that continue to make them serious threats to US forces. Long-range SAMs are usually located near high-value targets and provide area and point defense coverage. However, their range and mobility mean these systems could provide extended AD coverage that threatens friendly HVAA well into friendly airspace. Point defenses and maneuver units may use short-range air defenses (SHORADs), including SAMs, multiple calibers of AAA, and MANPADSs, that may be guided by infrared or radio frequency methods. For enemy maneuver units, the SHORAD will probably present a primary threat

against air assault, air mobility, and CAS operations. The proliferation and lack of warning of some SHORAD systems make them a serious threat to aircraft operating at low and medium altitudes, especially during takeoff and landing. OCA planners should expect MANPADS and AAA coverage wherever enemy forces are encountered.

6. Identification

For OCA operations, ID of both air and surface targets is essential.

a. ID of air targets for offensive purposes is similar to ID of air targets for defensive purposes. Procedures for ID of air targets are further addressed in Chapter III, "Planning," and Chapter V, "Defensive Planning and Operations."

b. ID of surface targets is a primary concern for OCA attack operations and SEAD. ID procedures for these are further addressed in this chapter.

SECTION B. OFFENSIVE COUNTERAIR OPERATIONS

7. General

a. The preferred counterair employment strategy is to execute OCA operations prior to the launch/dispersal of air and missile threats and as close to their base as possible. Prior planning and accurate and timely intelligence are keys to locating and attacking OCA targets as well as their supporting elements. Under decentralized execution, units tasked for OCA operations should have the latitude to plan, coordinate, and execute their operations. OCA operations may be conducted by any component of the joint force with the requisite capability using aircraft, missiles, SOF, surface fires, C2 systems, or ground forces.

b. OCA operations can be preemptive or reactive, and may be planned using deliberate or dynamic targeting. Missions using deliberate targeting are scheduled or on-call targets and appear on the ATO. These missions rely on continuous and accurate intelligence to identify target locations and support attack timing. Missions using dynamic targeting are for unanticipated/unplanned targets, such as mobile TSTs, that require rapid decisions and adjustments of the ATO being executed. Minutes often define the timeline when these targets are vulnerable to attack. Those targets requiring immediate action cannot be effectively attacked unless responsiveness and flexibility is built into the targeting process and the ATO. OCA may require provisions for ground/airborne alert aircraft, on-call surface fire support, and diverting aircraft with suitable weapons for the target/target system.

c. To ensure unity of effort, conservation of force, and friendly fire prevention, attacks within a designated surface AO require coordination with that supported component commander, as designated by the JFC. For a land AO, the land force commander normally establishes a FSCL as a permissive FSCM. Attacks short of the FSCL are controlled by the land force commander. Beyond the FSCL, coordination and restrictive measures are used to avoid conflicting or redundant operations. Forces attacking targets beyond the FSCL must coordinate with all affected commanders to allow necessary reaction and avoid friendly fire, both in the air and on the ground. Generally, the ATO process provides sufficient coordination for scheduled and on-call targets beyond the FSCL. If permitted by specific

JFC guidance, ROE, and preplanned procedures, unanticipated/unplanned targets may be attacked quickly using whatever information and coordination that can be provided through the C2 system. Liaison elements can be very useful for coordination of operations against unanticipated/unplanned targets. Under exceptional circumstances, if approved by the JFC, the inability to perform coordination may not preclude attacking the target, with the commander of the attacking force assuming the increased risk of friendly fire. Therefore, the component commanders must plan and coordinate procedures for operations against unanticipated/unplanned targets, especially those in the land or maritime component AOs. OCA operations include attack operations, SEAD, fighter escort, and fighter sweep, shown in Figure IV-2.

8. Attack Operations

a. OCA attack operations are offensive actions against targets that contribute to the enemy's air and missile capabilities. **All components normally have forces capable of supporting attack operations.** Some Service components refer to attack operations as strikes. The objective of attack operations is to prevent the hostile use of enemy aircraft and missiles by attacking them and their supporting elements and infrastructure with the fires necessary to create the desired effects. Technology, capacity, and fiscal constraints drive an inherent mismatch between missile threats and active defense capability and capacity. **Attack operations must be phased in as early as possible to effectively mitigate risk.**

b. **OCA Attack Operations Targets.** Attack operations target the following components of enemy air and missile capability (not in a prioritized order):

(1) Air and missile unit C2 nodes/centers.

(2) Aircraft on airfields and in shelters.

(3) CMs and BMs on fixed and mobile launchers.

(4) Airfield runways, taxiways, and underground facilities entrances.

(5) Major IADS C2 facilities.

(6) Operations and maintenance facilities, equipment, and personnel.

(7) Logistic support (e.g., fuel storage, munitions depots, electrical power generation and transmission).

Figure IV-2. Primary Offensive Counterair Missions

DESERT STORM OFFENSIVE COUNTERAIR

The Iraqi Air Force posed both a defensive threat to Coalition air operations and an offensive threat to Coalition forces in the region. In addition to a defensive capability, the Iraqi Air Force had a chemical weapons delivery capability and had used precision-guided missiles.

Initial targeting of the Iraqi Air Force during Operation DESERT STORM emphasized the suppression of air operations at airfields by cratering and mining runways, bombing aircraft, maintenance and storage facilities, and attacking [command, control, and communications] facilities. Coalition planners anticipated the Iraqis initially would attempt to fly large numbers of defensive sorties, requiring an extensive counterair effort. Air commanders also expected the Iraqis to house and protect aircraft in hardened shelters. An attempt to fly some aircraft to sanctuary in a neighboring country also was expected, although the safe haven was thought to be Jordan, rather than Iran.

SOURCE: Final Report to Congress
***Conduct of the Persian Gulf War*, April 1992**

(8) Intelligence collection and target acquisition systems.

(9) Transportation infrastructure serving garrisons/deployment sites for mobile/moveable missiles (e.g., bridges, tunnel adits, rail choke points).

(10) Aircraft carriers and sea-based offensive missile and AMD platforms.

c. **Intelligence.** Attack operations are highly dependent upon predictive and developed intelligence. Because of the difficulty in detecting highly mobile launch systems, an integrated network of C2 systems and sensors should be employed to share information and support NRT targeting and attack. National sensor systems will normally be required to augment theater air- and surface-based systems. Space systems provide tactical information to assist in determining enemy missile launch points and tracking. Additionally, intelligence collected by these systems can enable theater forces to anticipate hostile air and missile operations and determine their unit locations.

d. **Execution.** Depending on the resources available for the JFACC to conduct attack operations across the theater or JOA, adjacent geographic CCMDs or functional CCMDs may contribute forces across AOR boundaries to the supported GCC. The JFACC's recommendation and the JFC's decision on apportionment determine the amount of effort made available for OCA attack operations. Attack operations are generally planned against scheduled and on-call targets, but some flexibility must be planned for TSTs and unanticipated/unplanned targets of opportunity.

(1) **Planned Scheduled Targets.** Normally, OCA targets are nominated and prioritized through the joint targeting process that results in planned targets; that may include a list of approved TSTs that must be attacked at the onset of hostilities or even prior to the onset of hostilities. Typically, JFCs may organize a joint targeting working group (JTWG).

The JTWG supports the joint targeting coordination board by conducting initial collection, consolidation, and prioritization of targets and synchronization of target planning and coordination on behalf of the JFC. Some of the products the JTWG should produce are recommended joint integrated priority target list and apportionment, changes to target lists (particularly any targets nominated from the restricted target list), and changes to TSTs collection requirements and recommended priorities. These products may influence OCA operations.

(2) **Planned On-Call Targets.** The quicker the joint force can locate, identify, and target the enemy air and missile threats, the quicker they can be attacked and defeated. On-call missions are conducted against on-call targets, emerging (pre-launch and counter-fire) mobile targets, and TSTs that require the rapid, concurrent execution of mutually supporting tasks (e.g., detection, acquisition, ID, tracking, attack, and assessment). These operations rely on sensor systems, a responsive NRT sensor management and communications network, and weapon systems capable of attacking targets as soon as adequate targeting information is available.

(3) **Target Acquisition.** Acquisition and tracking systems may utilize cueing from wide-area and local surveillance systems and receive warning data from other intelligence sources. Acquisition supports target ID, discrimination, and timely engagement by accurately locating and monitoring targets and transmitting information relative to their movements.

(a) **Target Detection.** In the case of BMs and CMs, detection can be accomplished through identifying launch signatures or intelligence sources such as measurement and signature intelligence or signals intelligence. To support attack operations in all environments, joint forces should minimize the effects of enemy countermeasures while capitalizing on distinctive equipment signatures. Surveillance capabilities should integrate national-level intelligence with theater-level capabilities. Space-, sea-, air-, and ground-based area and point surveillance sensors also will be key to establishing a comprehensive surveillance network. Detection involves a systematic search of areas of interest identified during the IPB. After detection, warning or location data should be passed immediately to joint and component intelligence and operations centers, executing units, and air and surface search equipment. Simultaneously, tactical warnings should also be provided to targeted friendly assets.

(b) **ID.** ID of aircraft and missile supporting infrastructure and nodes requires management of target movement data, determination of the type of system employed, and discrimination of the launch and support systems from decoys. Target ID also requires the use of predictive intelligence, including the ID of potential future target locations, area limitation analysis, automated cueing of sensors to threatening targets, and discrimination of friendly forces that may be in the target area. For example, the CID process may provide a PID of friendly SOF positioned in close proximity to a high-priority target system deep in enemy territory being attacked from the air. The leader/battle manager of the attacking force would use that PID when making an engagement decision on that target.

(4) **Attack Timing.** Observed enemy activity should trigger timely counterair attack operations execution. Targets identified during the IPB process are included in the JFC's plan for preemptive strikes or operations at the onset of hostilities. **Targets acquired are attacked in accordance with JFC guidance that normally allows attack of unanticipated/unplanned targets as they present themselves.**

(5) **ATO.** The ATO, which considers all available assets (e.g., CMs, ATACMS), should be flexible enough to deal with immediate attack operations. The combat operations division of the JAOC adjusts the ATO in order to deal with real-time developments in the operational area. One method to permit this flexibility is designating selected forces in the ATO as either ground alert or airborne alert. These on-call assets can then be tasked real time against immediate counterair targets.

(6) **TSTs.** Prior planning, delegating authority, and having the appropriate C2 systems can streamline decision cycles for attacking counterair TSTs.

Refer to JP 3-60, Joint Targeting*, for a discussion of targeting and TSTs.*

9. Suppression of Enemy Air Defenses

a. SEAD missions neutralize, destroy, or temporarily degrade surface-based enemy ADs by destructive or disruptive means. SEAD must be an integral part of all planning and air operations, but the SEAD requirement will vary according to mission objectives, system capabilities, and threat complexity. SEAD operations are based upon the JAOP and the components' suppression needs, target priorities, and availability of SEAD assets.

b. SEAD objectives are specified by the JFC, who will consider the unique capabilities of each component to contribute to counterair operations. Traditionally, there are three categories of SEAD (AOR-/JOA-wide joint AD system suppression, localized suppression, and opportune suppression), each of which reduces friendly attrition from an adversary's AD system and creates more favorable conditions for friendly air operations. For each category, there are two means of executing SEAD, destructive and disruptive.

c. SEAD assets are often used in conjunction with other air operations/missions (e.g., air interdiction, OCA attack operations, airborne operations) when surface ADs are a factor. Specially trained aircrew and specially equipped aircraft are designed for SEAD missions, especially against an enemy IADS. SEAD-dedicated aircraft are normally equipped with special electronic detection and EA equipment capabilities (directed energy, antiradiation missiles, electromagnetic jamming, flares, chaff, and decoys). SEAD assets may be scarce and categorized as high-demand/low-density assets. Thus, during major operations, they usually will not be tasked for missions without a SEAD requirement. Other fighter-attack and multi-role fighter crews normally are trained to support the SEAD mission, especially against the enemy AD infrastructure.

d. **Threat.** AD threats can encompass many national or multinational systems normally integrated into an IADS. Adversaries' IADS have become increasingly complex and can differ widely from country to country in terms of organization, sophistication, and operational procedures. An adversary's IADS needs to be analyzed in-depth for strengths

and weaknesses, especially seams in coverage. The goal is to identify command structure, AD doctrine, early warning and tracking capabilities, C2 reliability/redundancy, and defensive weapons systems. SEAD operations target the following components of an IADS:

(1) C2 nodes/centers.

(2) SAM sites.

(3) AAA.

(4) Early warning and fire control radars and GCI sites.

(5) SAM carriers and storage bunkers.

(6) AD operations and maintenance personnel.

(7) Naval AD assets.

(8) Directed energy weapons.

(9) EW systems.

e. **Means of SEAD Execution.** SEAD operations are accomplished through denial, degradation, destruction, and disruption.

(1) **Denial.** Denial eliminates the utility of an enemy's targeted system, usually without physical damage. Denial prevents an enemy from acquiring accurate information about friendly forces.

(2) **Degradation.** Degradation permanently impairs (partially or totally) the enemy's targeted systems, usually with physical damage. Degradation may confuse or delay the actions of an enemy.

(3) **Destruction.** Destruction seeks the destruction of the target system or operating personnel.

(4) **Disruption.** Disruption temporarily denies, degrades, delays, or neutralizes enemy surface AD systems. Means include OCO, EA, and tactics such as avoidance or evasive flight profiles. In addition, UA can be used to actively employ disruptive means.

f. **Categories of SEAD Execution**

(1) **AOR-/JOA-wide AD System Suppression.** AOR-/JOA-wide suppression is conducted against specific enemy AD systems throughout the AOR/JOA to degrade or destroy their major capabilities/effectiveness. It targets high-payoff AD assets that result in the greatest degradation of the enemy's total system. It normally is a major effort to destroy/disrupt the whole enemy IADS and therefore may have a higher priority than localized suppression. **Typically, destruction of key C2 nodes has the most disruptive effect on an IADS.** In conjunction with SEAD, efforts are normally made to destroy/disrupt

enemy airborne warning and control aircraft. The immediate objective is to destroy or disrupt the integration and synchronization of the enemy AMD. The duration and level of disruption depends upon the JFC's objectives and the sophistication of the IADS.

(2) **Localized Suppression.** Localized suppression operations normally are confined to geographic areas associated with specific targets or transit routes for a specific time. Under localized suppression, SEAD aircraft normally escort other aircraft to protect them from a surface-based AD threat in that sector. Localized suppression normally takes place in different areas and times throughout the AOR/JOA. Although planned to protect specific operations or missions, localized suppression may also support AOR-/JOA-wide AD suppression.

(a) **Planned Localized Suppression.** Localized SEAD coordination occurs at all echelons. Localized suppression requests are processed from the lowest echelon of command to the highest using the appropriate air control system. Liaison elements located in the JAOC aid this effort. A requesting echelon or component must first consider what organic SEAD systems are available. When the requirements exceed the capability or availability of organic systems, the requesting component passes the requirements through its respective chain of command to the JFACC for resolution. Units requesting air support are required to identify known or suspected AD systems that could threaten the mission. SEAD requests also will include these defensive systems and identify other supporting targets that likewise cannot be engaged with organic capabilities/forces.

(b) **Immediate Localized Suppression.** Threat assessment and suppression requirements, usually destructive, must be made quickly when processing a request for this type of SEAD support. Procedures for requesting immediate localized suppression are similar to immediate requests for CAS. If a surface force cannot support the SEAD requirement, their component control center passes the request to the JFACC through their respective channels for immediate SEAD support considerations.

(3) **Opportune Suppression.** Opportune suppression is unplanned and includes aircrew self-defense and attack against surface-AD targets of opportunity. The proliferation of highly mobile AD weapon systems, coupled with deception and defensive tactics, will lead to an increase of opportune suppression. Any movement by AD systems from targeted locations will change localized suppression into opportune suppression. The JFC will establish ROE for opportune suppression because SEAD operations require correct ID of enemy surface systems to prevent friendly fire, especially when launching antiradiation missiles against sources of unknown, spurious electronic signals. **Realizing the window to engage highly mobile targets may be fleeting, concern should be given to establishing ROE and detailed planning that will allow the rapid prosecution of threats before they have the opportunity to move or conceal themselves again.** Opportune suppression is a continuous operation involving immediate response to acquired targets of opportunity. In cases where air assets are not available or not required, the component commander establishes priorities for opportune suppression. These priorities are forwarded from the designated fire support coordinator at component-level headquarters to the executing commands. The following are the different types of opportune suppression:

(a) **Aircrew Self-defense.** For guidance, see SPINS and CJCSI 3121.01, *Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces*.

(b) **Targets of Opportunity.** SEAD targets of opportunity are those enemy AD systems detected by surface or airborne sensors or observers within range of available weapons and not yet targeted. Many SEAD efforts by surface forces may be against targets of opportunity. Surface and air weapon systems may suppress AD targets of opportunity whenever capabilities, mission priorities, and ROE permit. Such suppression operations must be in accordance with established rules and FSCMs. The purpose of SEAD ROE is to enhance effective SEAD while minimizing risks to friendly forces.

(c) **Targets Acquired by Observers or Controllers.** Combat elements may often be in good position to acquire SEAD targets of opportunity. Observers, spotters, controllers, and liaison officers from the components have the authority to request suppression for SEAD targets of opportunity. Such personnel may include joint terminal attack controllers, airborne controllers and observers, TACPs, Marine assault support coordinators, artillery forward observers, UA operators, Army fire support teams, combat observation/lasing teams, and Stryker platoons. The observers or controllers will forward these requests through their respective fire support channels. Requirements should first be passed to suppression systems that belong to or support the unit acquiring the target because they can respond immediately. If the suppression requirement exceeds the capabilities of the ground forces, the immediate request will be sent via the air request net to the component control centers.

(d) **Targets Acquired by Aircrews.** When aircrews have acquired SEAD targets of opportunity but have not engaged them because of mission priorities, weapons limitations, or SEAD ROE, they pass the information to the agency controlling their mission. **This agency should immediately pass the targeting data through the appropriate C2 channels to the battle manager/operations center of the force component capable of targeting the threat.**

g. **Surface Component SEAD Capabilities.** Based on the JFC guidance, the land and maritime surface components' fires cells, fire support elements, and fire support coordination centers will determine the weapon systems available to conduct SEAD. Examples of these capabilities/forces include field artillery, mortars, naval surface fire, attack helicopters, EW, and SSMs. To ensure unity of effort and conservation of force, components need to coordinate their SEAD activities within their AOs with the JFACC to ensure they meet mission requirements and do not interfere with other planned operations. Component liaison elements, such as the BCD located in the JAOC, can assist localized suppression operations by coordinating the means to request surface fire support. **A rapid and free exchange of SEAD target information between the JFACC and other component commanders is required for effective surface suppression.**

(1) Component commanders will use their organic assets to locate, identify, and attack SEAD targets within their AOs and areas of interest whenever possible. They continually update lists of potential SEAD targets, including target location, desired effects, timing, and sequence of attack. In many cases, however, only the JFACC has assets to

specifically find and identify or attack certain SEAD targets so the components must request SEAD support. Component liaison elements normally are responsible for consolidating their component's SEAD requirements and priorities for action.

(2) An air support request should identify known or suspected enemy AD threats to, from, and around the target area. Within their capabilities, each echelon handling the request refines and updates threat data. The air support request contains this updated data, along with the type of suppression desired by the requesting component. For example, during the planning and execution of CAS, TACPs and other fire support agencies identify potential local SEAD targets and request SEAD fire support.

h. **ID**. ID for SEAD operations is critical when conducted in proximity to friendly assets to avoid friendly fire. Correct ID of all friendly electromagnetic signal emitters is important to prevent erroneous suppression (destruction or disruption) of friendly force electronic systems. Experience has shown that some friendly forces' electronic emitters are not properly identified to the SEAD forces. Those spurious emitters may be read as "unknown" or "hostile" by a SEAD aircrew, and dependent upon the ROE and intensity of the situation, that emitter may be engaged, perhaps in self-defense, unless PID is accomplished. If that friendly force with a spurious emitter could be positively identified by secure electronic means (i.e., CID), it would probably not be engaged in that context.

Refer to ATP 3-01.4/MCRP 3-13.3 [MCRP 3-22.2A]/NTTP 3-01.42/AFTTP 3-2.28, Multi-Service Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses*, for additional detailed information regarding joint SEAD.*

10. Fighter Escort

a. Fighter escort missions are often essential to offensive air operations and for protection of HVAAs. As an OCA mission, fighter escort sorties are normally flown over enemy territory to protect other primary mission aircraft from enemy fighters en route to and from a target area during offensive missions (i.e., for air interdiction, OCA attack operations, SEAD, and airborne operation). Fighter escorts may protect airlift, AR, EW, C2, search and rescue, and SOF aircraft from enemy fighters. Fighter escorts may also be used as a DCA mission, as in the case of HVAA protection. Air planners, along with JFACC/JAOC intelligence staff, must evaluate the threat posed by the adversary counterair forces and determine the type and size of fighter escort force required, because the same air assets are usually shared for DCA operations. The planners also must coordinate the support required by the escort force (i.e., AR, EW, C2).

b. **Offensive Fighter Escorts.** Joint air operations may require air-to-air-capable fighters to be used as escorts to protect friendly aircraft over enemy territory from attacks by enemy fighters. After considering the mission requirements, the required capabilities of the fighter escorts (e.g., speed, sophistication of weaponry, data links, guns) are determined by the operational/tactical commanders responsible for air operations. Those air operations packages may also be supported by specially equipped and trained SEAD assets when surface AD threats are also a concern.

c. **Defensive Fighter Escorts.** Fighter escort missions may be planned as DCA missions to protect HVAAs (e.g., AWACS, JSTARS, Rivet Joint, Compass Call, E-2) from potential enemy fighter attack over neutral or friendly territory.

d. **Threats/Targets.** The primary threats for fighter escorts include any enemy aircraft with a capability to attack and disrupt/destroy the primary mission aircraft. Escort fighters target only those airborne aircraft that threaten the primary mission. A critical aspect of this is accurate ID of potential air threats. Fighter escorts, in conjunction with their supported aircraft, must avoid the direct threat of enemy surface-based ADs (unless the fighters are escorting a SEAD package). If SAM/AAA threats cannot be avoided, the threat and risk to the primary mission and fighter escorts require SEAD support.

e. **Resources.** Dedicated air-to-air or multi-role fighters are best suited for the escort mission. Escort missions are more effective when ground and airborne early warning or GCI radar assets are available for situational awareness and threat warnings. Airborne tactical C2 assets are normally required for rapidly synchronized/complex air operations. The duration of the escort mission may require AR support for the escorts, even if the primary mission or other support aircraft do not. EW and CO support, apart from SEAD support, may also be required to disrupt the effectiveness of enemy communications and information systems that support their acquisition, tracking, and interception capabilities.

f. **Execution.** The specific responsibilities of the fighter escort force must be clear to all participants. In direct support, their mission is to protect the primary mission force and not necessarily attack enemy aircraft. **If the enemy chooses not to attack because a fighter escort is present, then the objective of the fighter escort has been met.** Similarly, escort fighters must exercise caution against being drawn away from the escorted force by diversion or decoys, thereby leaving that force vulnerable to other enemy aircraft.

11. Fighter Sweep

a. The fighter sweep is an offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area.

b. Normally, fighter sweeps are conducted in order to achieve local or JOA air superiority. Based on the targeting potential, airborne early warning and intelligence collection assets should be used in support for more effective acquisition of targets.

c. The need for fighter sweep missions versus attack operations will depend on the air and missile threat and the objectives of the JAOP. Intelligence should help OCA planners determine the proper force mix (air-to-air and air-to-ground) for a fighter sweep in a given sector.

d. **Threats/Targets.** The fighter sweep is a flexible air mission because threats/targets can be anywhere in the allotted sector. Fighter sweeps should normally be planned into areas where the threat from surface-based ADs is minimized, through tactics or attrition. This enables the concentration of OCA assets on the destruction of enemy aircraft, BMs, CMs, supporting launchers, and other such soft targets of opportunity.

58TH TACTICAL FIGHTER SQUADRON FIGHTER SWEEP/ESCORT DURING DESERT STORM

"The plan's essence—as far as the 58th was concerned—was that twenty F15s, in line with strategically positioned four ships (four-ship flights of aircraft) from several squadrons, were going to be the first air-to-air fighters to sweep across the Iraqi border after the STEALTHs, F-15E bombers, and TOMAHAWK missiles had made a surprise attack mostly on Baghdad's vital command and communications centers, hopefully knocking them out and, with them, the country's air defenses.

Then, as the bombers, done with their surprise missions, sped back to safety south over the border, the EAGLES, including two four ships from the 58th would charge in over their top, engaging any enemy fighters…and clearing a path for the waves of conventional nonstealth bombers and other warplanes that would be following."

SOURCE: *Wings of Fury* by Robert Wilcox, 1996, pp. 220–221

e. **Resources.** Package aircraft are normally those fighter/bomber aircraft used for OCA attack, air interdiction, CAS, strategic attack, and fighter escort missions. Friendly early warning and GCI radar sites and AWACS aircraft should be tasked to support the mission. This may be especially important when aircraft with BVR ID systems and weapons are used or when significant numbers of enemy aircraft may be encountered. SEAD requirements will be determined by enemy surface-based AD capabilities and the JFC's acceptable level of risk. Based on mission duration and distances, AR may also be required. EW may be used to enhance the element of surprise/disruption and give the attacking force a tactical advantage.

f. **Execution.** Fighter sweep missions should normally follow a series of OCA attack and SEAD operations aimed at neutralizing/destroying the enemy offensive and defensive aircraft and missile threats. However, a sweep may be synchronized with a rapid series of OCA operations (including attack, SEAD, and escort missions) or into other offensive air operations (i.e., air interdiction, strategic attack). Ground or airborne warning and control assets enhance overall effectiveness, but if those supporting resources are not available, execution of autonomous fighter sweeps with fighters using on-board radar and ID systems are possible. Flexibility being key, some fighter sweeps may be just air-to-air-capable fighters looking for airborne targets; others can be multi-role fighters hunting air and ground targets.

SECTION C. GLOBAL CONSIDERATIONS FOR OFFENSE

12. Global Strike

a. **General.** Global strike is the capability to rapidly plan and deliver extended-range attacks, limited in duration and scope to create precise effects against adversary assets in support of national and theater commander objectives. CDRUSSTRATCOM conducts global strike planning in partnership with CCDRs affected by emerging crisis events

requiring global strike force employment. The GCC in whose AOR the threat resides plans offensive options that support homeland AMD and global MD.

b. **Global Strike Planning.** Global strike planning against air and missile threats will be in support of the CCMD experiencing the effects caused by these threats. The need to support another CCDR may impact an ongoing operation within the AOR. Because of the relative scarcity of defensive assets when compared to the threat, GCCs and functional CCDRs should have well-developed plans and agreements with appropriate operating procedures in place for suitable offensive actions to counter air and missile threats. If global strike operations are directed by the President or SecDef, other GCCs may be tasked to support a neighboring GCC by conducting cross-AOR strikes against imminent threats (e.g., bombers and BMs pre-launch). CDRUSSTRATCOM may provide global strike in coordination with a supported/supporting GCC, as directed by the President or SecDef. MD planners should coordinate their efforts with global strike planners and countering WMD planners to optimize use of offensive actions to counter air and missile threats.

c. **Global Strike Execution.** Execution of global strike missions may be done by either USSTRATCOM or GCCs depending on the specifics of the mission.

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CHAPTER V
DEFENSIVE PLANNING AND OPERATIONS

"Find the enemy and shoot him down; anything else is nonsense."

Captain Manfred Baron von Richtofen
***The Red Baron,* 1917**

1. General

This chapter provides planning and operational guidance for DCA and global MD.

a. DCA operations consist of active and passive AMD measures executed through a joint C2 infrastructure. The AADC develops an IADS by integrating the capabilities of different components with a robust C2 architecture. Because of their time-sensitive nature, DCA operations require streamlined coordination and decision-making processes. This chapter discusses DCA from the perspective of an AADC being responsible for AMD operations, whether or not a JFACC is also designated as the AADC and/or ACA.

b. The AADP is the core joint planning document for AMD and is the responsibility of the AADC. The AADC uses assigned operation/campaign plan tasks to develop the AADP with the coordination of component commanders, MNF partners, and the JFC's staff. The AADP prescribes the integration of active AMD, passive AMD measures, and the C2 system to provide a comprehensive approach to defending against the threat. The AADP builds upon the DCA estimate and addresses command relationships, the adversary and friendly situations, the AADC's intent, CONOPS, and logistics and C2 requirements, as well as detailed weapons and sensor positioning control and engagement procedures. The AADP must be closely integrated with the ACP and other plans to facilitate a streamlined decision and coordination process for DCA operations.

SECTION A. DEFENSIVE COUNTERAIR PLANNING

2. General

a. Through promulgation of the AADP, the AADC implements theater-/JOA-wide DCA priorities, authorities, procedures, tasks, and actions approved by the JFC. The AADP is a plan of action for DCA operations, and the RADCs/SADCs, if established, may be required or may wish to provide supplements to the AADP to reflect additional guidance or intentions.

b. DCA planning should adhere to the following principles:

(1) **Centralized Planning and Direction.** Centralized planning and direction is essential for coordinating the efforts of the AMD forces. The JFACC/AADC maintains unity of effort and optimizes the contributions of all AMD forces.

(2) **Decentralized Execution.** Decentralized execution permits timely, decisive action by tactical commanders without compromising the ability of operational-level

commanders to direct DCA operations. Decentralized execution is essential due to the high tempo of DCA operations and because no one commander can control the detailed actions of a large number of units or individuals during a complex operation. The AADC/RADC/SADC organizational structure with delegated commit, ID, and engagement authority enables this principle.

(3) **Preplanned Responses.** Preplanned responses support prompt, decisive tactical action by exploiting prior development, testing, and rehearsal of DCA operations. Use of preplanned responses is especially important for BMD operations due to compressed timelines.

(4) **Effective and Efficient Communications.** An optimized, effective network that avoids unnecessary communications will both provide for an improved operational tempo and support key decision making.

(5) **Layered Defense.** A layered defense should provide multiple engagement opportunities, ideally beginning at the maximum range from friendly forces and areas, before attacking aircraft release their weapons or missile warheads can deploy. This includes interception of enemy ISR manned and unmanned aircraft. The layered defense normally includes land-based or sea-based aircraft, long-range and medium-range SAMs, and SHORADs (including AAA and close-in weapons systems), as well as disrupting and decoying effects. The layered defense normally includes support by necessary space, surface, and airborne early warning, detection, and tracking assets.

(6) **360-Degree Coverage.** 360-degree coverage guards against unpredictable targets, pop-up targets, and multi-threat/multi-axis attacks by aircraft (including ASMs) or CMs. Since the flight profiles of most BMs are more predictable, specialized assets used for BM defense can sometimes be positioned to provide weighted coverage to their defended assets based on anticipated threat axes.

(7) **Early ID and Tracking.** Early detection, location, ID, and tracking support prompt attack warnings and timely cueing of AMD. They also enable prompt, informed decision support for determining launch sites and engaging/targeting of TSTs (e.g., deployed enemy BM launchers).

(8) **Timely Alert and Warning.** Design and employ alert and warning procedures and networks, which in NRT directly influence sensor, combat system, and weapons readiness conditions.

(9) **Effective Use of Modes of Control.** For tactical AMD forces, these modes are key to operations. In AMD, centralized control is the mode whereby a higher echelon makes direct target assignments to fire units, and decentralized control is the normal mode whereby a higher echelon monitors lower echelon and unit actions, making direct target assignments to units by exception to ensure proper fire distribution or to prevent engagement of friendly aircraft.

3. Defensive Counterair Assets and Supporting Capabilities

a. DCA operations employ a mix of weapon, sensor, communications, and C2 systems integrated from all components to protect friendly forces, assets, population centers, and interests from air and missile threats. The integration of AMD systems provides efficient control and exchange of information among all AMD forces. Assets used in conducting DCA operations normally include fighters, SAMs, AAA, sensors, and CO and EW all networked using a resilient and flexible C2 architecture with interoperable data links, voice command circuits, and operator displays of the CTP. If OCA is not possible before threat aircraft or missiles are launched, DCA, which is by nature reactive, must be flexible enough to prevent the enemy from gaining the initiative.

b. **Fighters.** The AFFOR, NAVFOR, and MARFOR possess fighters for the AD role. Fighters can be tasked against both DCA and OCA operations, dependent upon the JFC's daily air apportionment decision.

c. **BMD Capabilities.** BMD systems provide surveillance, detection, tracking, and lower- and upper-tier intercept capabilities to counter BMs of all ranges. The objective of BMD is an integrated, layered architecture with overlapping sensors and weapons to enable multiple engagement opportunities.

d. **SAM Capabilities.** Land-based and sea-based AMD forces possess the following type of SAM capabilities:

(1) **ARFOR**. ARFOR have SHORAD and high-to-medium-altitude AD capabilities, as well as BMD systems capable of providing lower- and upper-tier intercept capabilities to counter BMs. Given that the medium altitude SAM systems can engage air as well as BM targets, these systems must be allocated appropriately.

(2) **MARFOR.** MARFOR are equipped with long-range radars, SHORAD weapons, and extensive C2 facilities. These capabilities can vary with the size of the MAGTF.

(3) **NAVFOR.** Navy capabilities include sensors, integrated fire control, SAMs, and the C2 suitable for regional/sector commands. Collectively, Navy cruisers and destroyers will provide area and point AMD. Other combatant ships may have self-defense SAM capability. Army MANPADSs can be embarked on most combatant and auxiliary ships and some combatant craft. Aegis Ashore performs BMD operations for the defense of defined geographic areas.

e. **Sensors.** Surface-, air-, and space-based sensors provide early warning, surveillance, detection, and tracking.

f. **Other Aircraft**. Other aircraft that contribute to DCA include airborne C2, ISR, AR, and EW platforms among others.

g. **Allied Capabilities**. When operating with a MNF, a multitude of AMD capabilities (e.g., fighters, sensors, SAMs, intelligence collection, and C2) from simple legacy to state-

of-the-art are possible. Integration of those capabilities without creating a seam in the AMD coverage is the challenge.

h. **EW.** EW assets and procedures are essential to AMD operations. They conduct EA to deny targeting and defeat inbound threats, and provide EW support for warning, tracking, and ID. In addition, because of the critical reliance on electronic and computer systems to sense, pass, and display air and missile threat and defense information, electronic protection is vital to ensure our forces can use the EMS as required.

i. **CO.** CO primarily supports active defense through the use of OCO prior to launch, although the effects may be seen during attacks through the disruption of launch timing or targeting. DCO and DODIN operations remain critical components throughout all counterair operations to ensure the proper functioning of AMD systems and equipment. Additionally, DCO detection of cyberspace attacks against AMD systems may provide warning of impending air and missile attacks.

4. Integrated Air Defense System

a. An IADS is not a formal system in itself but the aggregate of Service/functional component and agency AMD systems comprising sensors, weapons, C2, communications, intelligence systems, and personnel operating in a theater/JOA under the control of an AADC. Additionally, a theater AMD system typically depends on support and enabling functions from national assets and systems not controlled by the JFC. Because an IADS is normally composed of systems from different components, it requires significant integration and interoperability of communications and TDL architectures to generate its expected synergistic effects for the JFC. An IADS requires planning that begins with organizing the AMD forces and determining command relationships through the establishment of the COMNET for C2 of all the weapon systems integrated for DCA operations.

b. To ensure counterair situational awareness and enable decision making, plans for an IADS must include the requirement for a reliable, consistent COP/CTP available in all major and supporting C2 facilities.

c. The heart of the IADS is the integrated forces/capabilities controlled by, made available to, or in direct support of the AADC, and the actions planned and executed in accordance with the JFC's AADP. Subject to guidance from the JFC, each component commander within a joint force does the following in support of DCA operations:

(1) Coordinates and prioritizes their DCA operations and needs with the JFC and other component commanders through the AADC.

Note: The commander responsible for the JSAs within the JOA will coordinate with the AADC to ensure those areas are covered by the AADP and should provide a joint security coordinator liaison officer to the JAOC or whichever facility is the headquarters for the IADS.

(2) Employs AMD weapons in accordance with the ROE and the AADP.

(3) Identifies AADP capability shortfalls to AADC and requests OCA and other support to mitigate gaps.

(4) Coordinates and deconflicts the employment of forces with subordinate and other commands. Coordination for airspace control may be facilitated by collocating key airspace control facilities, AMD, and fire support coordination organizations.

(5) Coordinates/provides airspace control, as required, in designated areas in accordance with the ACP. Is prepared to assume airspace control in other areas when combat or other factors degrade the ACS.

(6) Forwards requests for coordination measures in accordance with the ACP.

(7) Develops detailed airspace control instructions, plans, and procedures in accordance with ACP guidance. Keeps these detailed instructions, plans, and procedures consistent with JFC-approved ACP.

(8) In support of the IADS, provides necessary facilities and personnel for airspace control functions in assigned areas and identifies those facilities and personnel for inclusion in the ACP.

Refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*, for a discussion of IADS.*

5. Air and Missile Threats

Air and missile threats comprise two main elements: air threats (including manned and unmanned aircraft, and aerodynamic missiles) and BMs.

a. **Air.** Air threats can include bombers, fighters, intelligence collection, SEAD, EW, airlift (for airborne attacks), and AR aircraft; helicopters; aerodynamic missiles (e.g., ASMs, CMs); and UA. For C-UAS, traditional AD early warning systems have difficulty detecting and tracking LSS UA. PID may also be difficult due to their size and similarity to small friendly UA. Engagement of LSS UA by traditional AD capabilities may be problematic due to their small size and slow speed.

For additional information on countering LSS UAS, see ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

b. **BMs.** BMs pose a significant challenge since they are often difficult to detect and destroy after launch. They can be employed from long ranges across AOR boundaries and in all types of weather. BMs, whether employed in high or low altitude trajectories, also present unique problems, including high velocities and short reaction times for the defender. BMs include close-range, short-range, medium-range, intermediate-range, submarine-launched, and long-range/intercontinental and have trajectories that are commonly divided into three phases of flight: boost/ascent, midcourse, and terminal. The development of

hypersonic weapons, combining the speed and range of IRBMs/ICBMs with the maneuverability of aerodynamic missiles, further stresses the capabilities of defensive systems.

6. Identification and Tracking

a. ID and tracking relies on detection and reporting. Execution of efficient DCA operations requires a continuous surveillance and reporting system capable of NRT production and dissemination of the tracking data necessary for effective decision making. Target track production is a sequential process that begins with the surveillance function. NRT surveillance and threat analysis is dependent upon the ability to merge all-source sensor data into an accurate theater/JOA attack assessment, whether from ground-, sea-, air-, or space-based sensors. As a track is detected, it is identified and labeled and this information is disseminated as rapidly as possible. The track data provided is sufficiently detailed and timely to allow decision makers to evaluate the track, determine the significance of the threat, and either designate DCA forces for interception or engagement, or advise units of the passage of friendly aircraft.

b. **Surveillance Planning Considerations.** Detection, tracking, and ID are dependent upon the surveillance plan. The surveillance plan should balance competing factors such as coverage, capacity/saturation, redundancy/graceful degradations, and network availability/capacity.

(1) **Detection.** Tracking begins with detection. The types of sensors and their placement determine the detection capability of the IADS. Sensor placement is affected by the threat, threat axis, terrain, weather, time-distance analysis, defended assets, desired engagement zone, sensor capabilities, and surveillance requirements. Sensor placement must also consider accessibility, connectivity, force protection, mutual interference, and HN support.

(2) **Track.** The act of establishing a track is critical in the surveillance process. A track is a digital representation of an object, and the establishment of a track with common nomenclature is essential for sharing of data. Sensors provide detections (i.e., a radar return). However, the detections must be evaluated by a machine process or human operator to become a track.

(3) **ID.** ID is used to support current ROE in light of weapon systems capabilities. The AADC develops ID criteria (both procedural and positive) for JFC approval in the AADP, with specific instructions in the ATO and/or SPINS. Not all participants may see the same ID-related information. This is dependent primarily on TDL system implementation, J-series versus M-series message standards, and operator display capabilities. Because of the different implementation of TDL messages, planners should consider limiting the number of track classifications (ID symbols) to reduce confusion and the potential for friendly fire. PID (either on-board or off-board) or visual ID nearly always will be part of the ID process. Further details on ID are in Chapter III, “Planning.”

c. Every opportunity within tactical timelines should be taken to resolve all track and ID ambiguities prior to engagement by firing units. Evaluation reports with details of tracking shortfalls may be researched at the Joint Deployable Analysis Team at http://www.eglin.af.mil/About-Us/Fact-Sheets/Display/Article/1077810/joint-deployable-analysis-team/.

d. During plans development, the parameters and details for positive and procedural ID, auto-ID systems, formation assessment, and CID should be developed and approved by the JFC along with the ROE and promulgated as discussed in Chapter III, "Planning."

Refer to ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*, for a detailed discussion of the ID/CID process.*

7. Active Air and Missile Defense Planning

a. **General.** Active AMD is direct, defensive action taken to destroy, nullify, or reduce the effectiveness of air and BM threats against friendly forces and assets. Active AMD consists of AD and BMD. The integration of these elements is unique to each JFC and contributes to defense in depth, with the potential for multiple engagements that increase the probability for success. During planning, multiple options should be developed using various combinations of weapon systems, WEZs, and tactics allowing the flexibility to defend all critical assets.

b. **Active AMD Design**

(1) **Types of Defensive Coverage**

(a) **Area Defense.** Area defense uses a combination of weapon systems (e.g., fighters and long-range SAMs) and various combinations of airborne and ground-based sensors to defend broad areas.

(b) **Point Defense.** Point defense protects limited areas, normally in defense of vital elements of forces or installations. For example, a SAM unit or electronic jammer positioned to protect an airfield or carrier strike group is considered point defense.

(c) **Self-Defense.** Self-defense operations allow friendly units to defend themselves against direct attacks or threats of attack through the use of organic weapons and systems. The right of self-defense is inherent to all ROE and weapons control procedures.

(d) **HVAA Protection.** HVAA protection may be performed by fighters CAP and escort tactics, but can also be accomplished by Aegis-equipped ships.

(2) **Active AD Planning Tasks**

(a) **Determine AMD Sensor Employment Plan.** The development of sensor networking and advanced engagement capabilities (e.g., launch on remote and engage on remote) have added complexity to the development of a sensor employment plan. In

addition to positioning sensors for wide-area surveillance purposes, planners must balance the need to achieve fire control quality track data to support engagements by weapon systems.

1. **Determine Surveillance Coverage Areas.** Defended airspace and its approaches must be under continuous surveillance to provide early warning and support engagements. The DCA planner should use a combination of air-, surface-, and space-based detection assets to achieve these requirements. AD planners should use maritime sensors to maintain awareness of current threat axes from maritime air and missile threats. Adequate early warning of air and missile attacks provides the reaction time necessary for friendly forces to seek shelter or take appropriate action. Early warning of hostile air and missile attacks to support cueing and early engagement is vital for a layered defense.

2. **Determine Sensor Support Opportunities**. While some sensors are positioned primarily for their wide-area surveillance (e.g., AWACS), other sensors support weapon systems' fire control in addition to the wider surveillance network (e.g., Patriot) and their positioning is a balance between supporting fire control and surveillance tasks. Sensor networking of these capabilities provides overlapping coverage and contributes to a robust CTP and supports early warning and multiple engagement opportunities.

(b) **Develop the Active AMD Fire Plan.** The objective is to provide the required level of protection specified in the CAL. Defense design involves applying a mix of the following six employment guidelines, because not all may be required or possible to defend dependent upon the threat and DCA assets available:

1. **Mutual Fires Support.** Weapons are positioned so that the fires of one weapon can engage targets within the dead zone of the adjacent weapon systems.

2. **Overlapping Fires.** Weapons are positioned so that their engagement envelopes overlap. Because of the many altitudes from which the enemy can attack or conduct surveillance operations, defense planners must apply mutual supporting and overlapping fires vertically and horizontally.

3. **Balanced Fires.** Weapons are positioned to deliver an equal volume of fires in all directions. This is necessary for AD in an area where the terrain does not canalize the enemy or when the avenue of approach is unpredictable.

4. **Weighted Coverage.** Weapons are positioned to concentrate fires toward the most likely threat direction of attack. Based on the tactical situation, a commander may risk leaving one direction of attack unprotected or lightly protected to weight coverage in a more likely direction.

5. **Early Engagement.** Sensors and weapons are positioned to maximize early warning and to engage and destroy aircraft and missiles before they acquire and fire on or damage the defended asset.

6. **Defense in Depth.** AMD sensors and weapons are positioned to enable multiple engagement opportunities and deliver an increasing volume of fire as an enemy air

(including aerodynamic and ballistic missile) threat approaches the protected asset. Defense in depth reduces the probability that "leakers" will reach the defended asset or force.

7. **Fires Coordination.** In addition to positioning considerations discussed above, the fire plan must include inter-unit coordination procedures to prevent over and under engagements, as well as managing inventories and matching engagement capabilities against threat types.

(c) **Establish WEZs.** In AMD, a WEZ is airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with a particular weapon system. WEZs are a critical part of DCA planning because they represent part of the current defense posture against the air and missile threats. WEZs are established through the AADP and ADMs and can be changed as necessary. WEZs also represent the integration of airspace control with AMD. The types of WEZs are discussed as follows.

1. **MEZ**. In AMD, a MEZ is airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with SAM systems as discussed below:

a. **Types of MEZs**

(1) **High-altitude Missile Engagement Zone (HIMEZ).** In AMD, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with high-altitude SAMs, to include endo- and exo-atmospheric BM intercepts.

(2) **Low-altitude Missile Engagement Zone (LOMEZ).** In AMD, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with low- to medium-altitude SAMs.

(3) **Short-range Air Defense Engagement Zone (SHORADEZ).** In AMD, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with SHORAD weapons. It may be established within a LOMEZ or HIMEZ.

Note: A MEZ can include one or more HIMEZs, LOMEZs, and/or SHORADEZs.

b. Generally, MEZs are established first (before other types of WEZs) for surface defense and are based on specific boundaries and weapons system capabilities. For the organic SAM capability of a surface force, the MEZ boundaries should be within the component AO, and for direct support, the MEZ should cover the defended asset/area. The MEZ area should be large enough to allow early engagement of threats. ASM launch platforms should be destroyed or neutralized before they can launch standoff munitions, UA before they reach sensor/weapon range of defended assets, and BMs prior to maneuver or submunitions release. To the maximum extent possible, all targets should have multiple, layered engagement opportunities to ensure an effective defense. The AADP, ACP/ACO,

and SPINS should specify what targets can be engaged in the MEZ and the weapons to be used.

c. Maritime strike groups are not static; they generally employ a moving MEZ around the high-value unit (e.g., an aircraft carrier). AD measures in a maritime AO are generally defined by altitude, range, and azimuth from the high-value unit, an AD unit, or the screen center. Joint engagement zones (JEZs) and fighter engagement zones (FEZs) typically apply farther from the high-value unit where fighter aircraft operate as a maritime force's outer defensive layer.

2. **FEZ.** In AD, a FEZ is airspace of defined dimensions within which the responsibility for engagement of air threats (manned and unmanned aircraft and aerodynamic missiles) normally rests with fighters.

a. FEZs are normally established to support CAP operations after surface MEZs are established.

b. The FEZ normally extends above the coordination level (the separation altitude between fixed-wing and rotary-wing aircraft) to the upper altitude limit of either the assigned CAP fighter or primary threat aircraft.

c. Where a MEZ and FEZ overlap horizontally, they may be separated vertically.

d. FEZ boundary considerations also include mission (e.g., area or point defense), fighter weapons (e.g., types of AAMs), and availability of fuel (AR or return to base), among other considerations.

3. **JEZ**. In AD, a JEZ is airspace of defined dimensions within which multiple AMD systems (SAMs and fighters) are simultaneously employed to engage air and missile threats. The JEZ blends MEZs and FEZs into a more flexible engagement zone construct that can concurrently support operations against enemy air targets.

a. The JEZ is only appropriate or possible when the JFC/JFACC/AADC has a high level of confidence in the CTP and positive control and separation that will prevent SAMs from targeting friendly fighters.

b. Dependent upon the operational situation and ROE, a JEZ may be employed when one or more of the following factors exist:

(1) The enemy's employment of low altitude CMs dictates the need to ensure the ability to engage with all available forces throughout the zone, accepting risk to friendly aircraft.

(2) There are significantly more assets that require defense than there are forces to defend them.

(3) The operational characteristics of friendly fighters and SAMS and the nature of the operation do not lend themselves to establishing a separate MEZ/FEZ.

(d) **Determine Surface-Based Defenses C2 Coverage and Fire Control.** DCA operations depend upon effective and redundant C2 planning. The IADS should integrate the ground- and sea-based C2 nodes, airborne C2 platforms, and the surface force AD fire direction centers. As a minimum, the following is required:

1. Designate RADCs/SADCs as required and incorporate into the AMD architecture.

2. Specify required data links between C2 nodes and forces.

3. Designate primary and secondary C2 centers for all active AMD forces.

4. Align control centers with their operational forces whenever possible.

5. Establish an intelligence and warning architecture; ensure remote units and separate forces are addressed.

6. Delegate necessary authorities and establish conditions for automatic permissions, transfers of function, or other means to establish and sustain a responsive defense.

7. **Determine Level of Control (Engagement Authority).** This describes the AMD echelon permitted to authorize engagement of an air or missile threat. It can be the AADC, RADC, SADC, ADA battalion fire direction center, or the individual fire unit. Engagement authority, originating with the JFC and normally delegated to the AADC, may be delegated to the RADC/SADC to allow for decentralized execution. Further delegation of engagement authority depends on operational necessity and ROE for DCA operations. **The AMD element with engagement authority makes the decision whether to employ weapons against a particular air or missile threat.** Engagement authority may be established at different levels for fixed-wing aircraft, rotary-wing aircraft, UA, and missiles, or for the type of capability employed, and the levels of control may change over the course of an operation. For example, engagement authority is delegated to the lowest level SHORAD fire units for CMs and UA, to SAM fire units for BM engagements, and normally remains at SADC or higher for enemy aircraft. Selection of the engaging system may be directed by the engagement authority or delegated to a subordinate unit.

8. **Determine Modes of Control.** For certain surface-based AMD systems the three modes of control are centralized, decentralized, and autonomous. The mode of control will depend upon the capabilities of the C2 systems being employed and both the friendly and enemy air situations.

a. **Centralized control** is when a higher echelon must authorize target engagements by fire units. **Permission to engage each track must be requested by the fire unit from that higher echelon.** Centralized control is used to minimize the likelihood of engaging friendly aircraft while permitting engagements of hostile aircraft and missiles

only when specific orders are issued to initiate the engagement. Normally, centralized control is used for engaging aircraft.

b. **Decentralized control** is the mode of control used when a higher echelon monitors unit actions, **making direct target assignments on a management by exception basis** to units only when necessary to ensure proper fire distribution, to prevent engagement of friendly air platforms, and **to prevent simultaneous engagements of hostile air targets. Decentralized control is used to increase the likelihood that a hostile aircraft or missile will be engaged as soon as it comes within range of a given weapon.** Surface-based AMD forces (including SHORAD units) will comply with established ROE and WCS as directed by the designated air defense commander for their operational area.

c. **Autonomous operations** occur when a firing unit has lost all communications (i.e., voice, data link, and tactical chat) to their higher headquarters. The firing unit commander assumes full responsibility for control of weapons and engagement of hostile targets in accordance with existing ROE, WCS, and previously received directives.

(e) **Establish CAP Stations.** One method of employing fighters is the CAP. Fighter aircraft normally perform CAPs during DCA operations. CAP stations usually contain two to four fighter aircraft armed for air-to-air engagements. The following considerations apply when planning a CAP:

1. Assign barrier CAPs for the defense of a broad area when protecting multiple assets.

2. Assign a CAP to a specific asset (e.g., high-value surface or airborne asset).

3. Assign CAPs to special missions, as appropriate. For example, a barrier CAP may be tasked to inspect or "sanitize" returning strike packages to ensure enemy aircraft do not shadow friendly aircraft back to friendly areas/bases.

4. If Navy and Marine sorties are available for DCA tasking, the JFACC/AADC can employ the sorties where most appropriate. Carrier strike groups usually provide their own DCA protection.

5. Consider employing a CAP if defense is still required and inventory depletion or combat losses result in gaps in SAM coverage in MEZs, or if specific SAM interceptor inventory must be conserved for defense against BM threats rather than used against air threats.

(f) **Establish a Crossover Zone.** To facilitate mutual support, defense in depth, and overlapping fires, MAGTF AD assets employ a crossover zone that overlaps a MEZ and FEZ. This allows C2, DCA aircraft, and ground-based AD weapons systems to coordinate engagement in this area by the most appropriate weapons system, while maintaining a MEZ/FEZ construct.

(g) **Position Airborne C2 Stations**

1. Station assets within ranges to perform their C2 function but where threats are minimal and assets cannot be easily engaged and destroyed.

2. Plan to dedicate fighter escort or CAP protection if required.

(h) **Determine Airborne C2 Coverage and Fire Control.** When planning coverage and fire control, consider the following:

1. DCA fighter aircraft are normally under positive control of a C2 element. Fighters may conduct intercepts autonomously when authorized.

2. With a lack of C2 aircraft or if the distance of operations precludes positive control, C2 agencies may provide broadcast information of target data.

3. Some US and coalition partner fighter aircraft operate with advanced radars and BVR weapons that allow simultaneous engagements of multiple targets.

4. Fighters normally are in communication with a C2 element that points out targets, provides CID when available, and may vector them toward airborne targets. The C2 element also provides a communications link between the JAOC combat operations division and the airborne fighters. This communication link provides a flexible and reactive C2 arrangement.

5. Dependent upon the situation and ROE, airborne C2 elements may have the capability to retask fighters to meet protection requirements.

(i) **Weapons Readiness States.** Determine the required degree of readiness of AMD weapons which can become airborne or be launched to carry out an assigned task. Weapons readiness states are normally expressed in numbers of weapons and time.

(j) **Sensor Readiness States.** Due to frequency interference, high power, or HN considerations, key AMD sensor abilities to transmit may be restricted during the build up to active hostilities. AMD planning must consider the readiness of sensors. Sensor readiness is normally expressed in minutes to transmit.

c. **Active BMD Design**

(1) **General.** BMD planning adds a unique aspect to the development of the AADP and to planning DCA operations. While planning for both AD and BMD are integrated in the AADP, the BM threat is normally more difficult to counter due to BMs being difficult to detect and track for the purpose of engagement.

(2) **BMD Design Considerations.** Some of the same design considerations listed for AD planning are generally applicable to BMD planning; specifically, types of defensive coverage, develop the active fire plan, determine surface-based defenses C2 coverage and fire control, and weapons readiness states. Additional BMD design considerations include:

(a) **Positioning of Assets.** Assets should be positioned to provide a shoot-look-shoot (SLS) opportunity where possible. The judicious application of a SLS firing doctrine can reduce interceptor consumption and provide high levels of protection to those designated critical assets.

(b) **Defended Area.** A defended area is a geographic area protected against BM attacks.

(c) **Launch Area Denied (LAD).** LAD is the geographic area from which an enemy targeting a designated defended area cannot launch a BM without it being engaged by BMDs. Assigning units to achieve LAD by analyzing BM operating areas for assigning assets may be one method of consideration in formulating the defense design.

(d) **Firing Doctrine.** Firing doctrine should address the level of protection required for the asset under attack, interceptor salvo sizes per engagement, coordinated fires among and across layers, and inventory management, to include threshold levels and modified procedures once those threshold levels are crossed.

(e) **BMD Sensor Employment Plan.** The existence of primary threat axes, the space-based sensor early warning system, and sectored BMD radars affects development of the BMD sensor employment plan.

1. Determine Surveillance Coverage Areas. The short flight times of BMs requires early detection of launches. BMD radars rely on queuing from space-based sensors. BMD planners must assign BMD sensors to surveil BM operating areas to provide independent threat acquisition.

2. Determine Sensor Support Opportunities. BMD weapons systems have steadily increasing abilities to employ advanced engagement tactics. These tactics not only increase the defended footprint but also increase the depth of battlespace and permit the use of layered engagement tactics. Accordingly, BMD planners should position assets and supporting sensors to exploit these opportunities.

(f) **BMD Interceptor Airspace Considerations.** Planners must account for upper- and lower-tier interceptor flight paths and engagement volumes. Upper tier BMD (e.g., SM-3 and THAAD) engage BMs at altitudes well above typical FEZs. Collision risk with interceptors is limited to the relatively narrow interceptor missile flight paths. Consideration (e.g., degree of urbanization, shot delays, target types, major infrastructure, potential effects of collateral damage) should also be given to the effects of falling intercept debris. These concerns are addressed in the ACP/ACO (e.g., HIMEZ and associated amplifying guidance), SPINS, AADP, and other theater guidance.

(g) **Radiation Hazards.** Radiation hazards associated with high-power radars must be made known to all appropriate personnel.

d. **Active AMD Integration**. Based on the expected combined air and BM threats, the challenge for the AADC will be to balance competing air (including CMs) and BM defense demands. This could result in an economy of force issue by requiring use of land- and sea-

based sensors or SAMs (which are capable of both active BMD and AD) for BMD only, while using purely AD assets for defending against the enemy air threat. A significant missile threat will have great impact on the AADP (i.e., the DAL, placement of WEZs, and types of defensive coverages). Flexibility will be required as there may not be enough resources to defend all assets.

8. Passive Air and Missile Defense Planning

a. Focused attacks by adversary air and missile threats may overwhelm defense designs. Therefore, passive AMD techniques should be employed at every location, including those protected by active AMD assets.

b. Passive AMD provides individual and collective protection for friendly forces and critical assets and is the responsibility of every commander in the joint force. It includes measures, other than active AMD, taken to minimize, mitigate, or recover from the consequences of attack aircraft and missiles. Passive defense is similar for air and BM threats, with the exception of detection and warning times.

(1) The AADC is responsible for timely warning of air and missile attacks, which initiates some of the passive AMD measures. Warnings may be either general or specific. General warnings indicate that attacks are imminent or have occurred, while specific warnings signify that only certain units or areas are in danger of attack. The timeliness and accuracy of AMD warnings may have a significant impact on the effectiveness of passive AMD measures.

(2) Passive measures do not involve the employment of weapons or active means against specific inbound threats, but they do improve survivability. Depending on the situation and time available, a variety of measures may be taken to improve the defensive posture of friendly forces and assets. Some measures should be planned and practiced during peacetime. **Those assets not assigned adequate AMD defense assets rely more heavily on passive measures for protection.**

(3) The likelihood and timing of an attack may be estimated by analyzing the expected enemy COA, targeting process, and offensive air and missile capabilities (including munitions characteristics and quantities).

c. **Passive Considerations and Measures.** When planning passive AMD, the following are four principal considerations and the passive AMD measures they incorporate.

(1) **Detection and Warning Systems and Procedures.** Timely detection and warning of air and missile threats provide reaction time for friendly forces to seek shelter or take appropriate action. Reliable and redundant connectivity for communications and sensor systems is vital for accurate and timely warning. A combination of air-, space-, and surface-based detection and communication assets should be established to maximize detection and warning. **Warning methods and procedures must be established, disseminated, and rehearsed down to the unit level to be effective.** "All clear" procedures should also be established to notify forces when a warning is false or the threat no longer exists.

(a) Within the theater/JOA, the detection of enemy air threats and warning/cueing for AMD are normally provided by the JFC's DCA, and theater or national intelligence collection assets. The JFC/AADC controls the surface- and air-based radars/sensors that detect and track the enemy air threats and the C2 systems that disseminate those warnings.

(b) Missile warning assets normally detect the launches of threat BMs, predict the impact points, and communicate warnings to the applicable JFC in the theater/JOA. When tasked, and upon the initial missile warning provided by space-based assets, theater-based systems may help track a threat missile. The JFC, in turn, is responsible for dissemination of tactical warnings throughout the theater/JOA.

(c) Spikes in enemy CO and EW may be an indication of impending air and missile attack and can be used to support detection and warning. Defensive cyberspace assets may detect potential strikes, depending on the enemy's use of synchronized cyberspace attack with other fires.

(2) **Reduction of Enemy Targeting Effectiveness.** Certain measures may be taken to reduce the effectiveness of enemy targeting and attacks, to include mobility, deception, and OPSEC.

(a) **Mobility.** Mobility reduces vulnerability and increases survivability by complicating enemy surveillance and reconnaissance efforts to pinpoint locations of targets. Mobility may be coupled with concealment to "hide" assets.

(b) **Deception.** Deception misleads adversaries by manipulating, distorting, or falsifying friendly actions. Deception may be used to cause an enemy to waste munitions on false targets, deceive their combat assessment process, and falsely influence their decision makers by feeding their intelligence collectors what appears to be credible information. Deception may deny the enemy the ability to gain correct tactical, operational, and strategic information when using their reconnaissance and surveillance systems.

(c) **EW.** EW employs systems or weapons that use electromagnetic energy for disruption, degradation, denial, and deception. Jamming can prevent air and missile systems from communicating with C2 nodes and/or coordinating with other air systems. Passive EA can also cause confusion for air and missile sensors which reduce their system's ability to effectively acquire their targets. Due to an overlap in effects/results, discerning whether an EW effort is passive or active defense can be difficult. In general, EW efforts that seek to defeat specific inbound threats (e.g., with short-lived decoys) can be considered to be active defensive means, while persistent efforts that are effective against multiple threats would be passive defense.

(d) **OPSEC**

1. **Emission Control/Communications Security.** Communications security and an emission control program for infrared, electromagnetic, and acoustic signature reduction can deny the enemy sensor and reconnaissance assets timely acquisition and ID of friendly target systems (e.g., C2 nodes).

2. **Unit Security/Counter-Surveillance.** Local unit security is an important element in denying accurate targeting data to enemy SOF or other enemy agents. Patrolling and ground forces support is important to keep enemy forces from conducting harassment or interdiction attacks against DCA assets.

3. **Nighttime Support Operations.** Consider nighttime for conducting time-consuming resupply or other operations that could highlight units' visibility and increase their vulnerability.

4. **Camouflage and Concealment.** Practice visual signature reduction measures that can "hide" or deny accuracy in locating friendly targets/target systems. These measures may be conducted continuously or in response to specific warnings. Timely intelligence concerning the overflight by enemy satellite and aircraft collection systems is important to the effort. Those measures also may be coupled with deception measures to further complicate chances of effective enemy attacks. The employment of obscurants can negate the effectiveness and/or accuracy of attacks.

Refer to JP 3-13.3, Operations Security*, for additional discussion regarding OPSEC.*

Refer to JP 3-13.4, Military Deception*, for more details regarding deception operations.*

(3) **Reducing Vulnerability.** There are four measures that may enable friendly assets to survive enemy attacks by reducing their vulnerability.

(a) **Hardening.** Valuable assets and their shelters are hardened to protect against physical attack, EMP, and transient radiation. Hardening measures should be accomplished during peacetime whenever possible. Hardening reduces the effect of attack on systems and facilities (e.g., aircraft, missiles, air base support equipment and facilities, C2 facilities, and communications nodes). When EMP hardening is not feasible, an EMP vulnerability assessment should be made to identify suitable preparatory and defensive measures.

(b) **Redundancy.** A principal means of preserving combat power is duplication of critical nodes, capabilities, and systems that are particularly vulnerable to air and missile attack and for which other passive measures may be less appropriate. Redundancy includes dual, contingency, or backup capabilities that can assume primary mission functions (in whole or in part) upon failure or degradation of the primary system. Of primary concern are soft targets such as C2 nodes, sensor antennas, and fixed sites such as airfields and ground stations for airborne sensors.

(c) **Dispersal.** Dispersal reduces target vulnerability by decreasing concentration making individual targets less lucrative. Combined with mobility and deception, dispersal increases enemy uncertainty as to whether a particular location is occupied and, if so, whether it will be occupied when the attack is executed.

(d) **CBRN Defense.** CBRN defensive equipment and facilities protect against the effects of CBRN hazards by providing contamination detection, shelter, and decontamination. Individual protective equipment allows vital functions to continue in the

CBRN environment and to mitigate the effects of CBRN events. Forces need effective training and appropriate tactics, techniques, and procedures to operate CBRN equipment and facilities, including individual protective equipment, in order to operate in a CBRN environment. Air transportable protection allows contaminated/contagious casualties to be removed safely from the CBRN environment.

See JP 3-11, Operations in Chemical, Biological, Radiological, and Nuclear Environments, *for further details regarding protection and operations in a CBRN environment.*

(4) **Recovery and Reconstitution.** Following an air or missile attack, units should be restored to a desired level of combat effectiveness commensurate with mission requirements and available resources. Resources should be made available to restore capabilities in accordance with JFC established priorities. Recovery and reconstitution after a CBRN event will require special planning considerations, as improper handling of CBRN casualties and contaminated material and equipment may impact other activities.

d. **Resources for Passive AMD.** The components of the joint force bring unique capabilities to the different aspects of passive AMD. Engineers, CBRN defense and decontamination experts, explosive ordnance disposal personnel, and medical units may contribute significantly to passive AMD efforts. A threat-based risk analysis, distributing area responsibilities, and establishing support tasks are factors that impact AMD. Some MNF members may specialize in passive AMD capabilities. HN support and civilian infrastructure may augment or enhance joint force recovery efforts, either through government-coordinated action or contracted support. It is essential these capabilities, when available, are planned and integrated into the total passive AMD capability.

9. Area Air Defense Plan

a. The AADP is a plan of action for DCA operations. It prescribes the integration of active and passive AMD design, C2 procedures, and supporting mission aspects to provide a comprehensive approach to defending against the threat. The AADP is based on the JFC's established objectives and guidance consistent with the theater OPLAN, OPORD, and CONOPS.

b. The AADP is developed by the AADC in coordination with the joint force components and JFC staff, integrating DCA operations throughout the theater/JOA. The AADP reflects the JFC's objectives, priorities, and the specific need for control of the air and protection, as well as the need for appropriate component commanders to provide the surface-, air-, and sea-based forces/capabilities for those DCA operations required to execute that plan.

c. Due to the dynamic nature of joint counterair operations, the AADP may need to be continually modified. Ideally, as the JFC's operation/campaign progresses and the AADP is refined, the combination of DCA and OCA operations should diminish the enemy's ability to conduct air and missile attacks, reducing the requirement for DCA operations and the threat to the JFC's freedom of action. AADP development considers the entire range of enemy air

threats, likely COAs, and capabilities and limitations of friendly AD systems, and informs the OPTASKLINK, tactical operational data, ATO, SPINS, and ACO.

d. Development of the AADP and the planning of DCA operations involves integrating friendly force capabilities and limitations against adversary vulnerabilities to achieve optimum results in a dynamic tactical environment. Factors that should be taken into consideration for planning include:

(1) **Mission Analysis.** The mission statement is the AADC's expression of what AMD forces must accomplish and why. During mission analysis, the AADC translates specified and implied tasks into missions for the component and subordinate commands with DCA assets. Intent of the JFC, the current situation, resources available, and the desired end state contribute to the mission statement.

(2) **DCA Estimate.** Planners use the DCA estimate to evaluate how factors in each field of interest will influence the potential COAs, to provide information regarding their supportability, to recommend DCA priorities, and to form a basis for the AADP. The estimate provides the basis for planning current and future DCA operations and is developed in concert with the JFC's staff. See Appendix B, "Defensive Counterair Estimate Format."

(3) **Objectives.** The AADC develops an AADP to achieve DCA objectives that support the counterair effort to gain and maintain the desired degree of control of the air and protection required by the JFC to satisfy overall campaign objectives.

(4) **Force Requirements.** The AADC determines the type and number of forces needed to sustain the DCA effort until the objectives are accomplished, understanding that some assets may be shared with and lost between OCA, DCA, and other operations.

(5) **Logistics.** A comprehensive analysis of logistic capability is integral to support of DCA requirements. Planners must anticipate losses of critical items (e.g., fuel storage) and be aware of any agreements or CCDR directives that significantly alter responsibilities for logistic support.

(6) **Synchronization/Deconfliction.** Synchronizing/deconflicting employment of capabilities/forces and matching appropriate weapons against enemy critical vulnerabilities are essential functions for the AADC.

(7) **Weapons Availability and Pairing.** Airborne targets may seem vulnerable to attack but may be impervious to certain weapons or EW systems. Planners must have a detailed understanding of enemy capabilities and friendly force DCA weapons and systems capabilities. They must analyze the threat from the perspective of correctly paired target-shooter adequacy of the AMD force. This will feed into logistic planning, CAL/DAL force allocation, and forces requests.

(8) **Force Availability.** Careful planning is required to ensure timely arrival and rapid integration of AMD forces and to synchronize use of assets for DCA, OCA, and other operations.

(9) **Economy of Force.** In conjunction with planned responses, proper sizing and composition of responses to enemy attacks/penetrations of friendly airspace are essential. Economy of force includes analysis of the probability of destruction/disruption, distances, weather, and weapon system reliability.

(10) **Operational Assessment.** A comprehensive, continuous operational assessment is an essential part of DCA planning. The AADC's staff must determine how to evaluate the results of OCA and DCA operations to assist in ID of the decision points (e.g., levels of attrition of enemy missiles or aircraft, depletion of friendly inventories requiring tactic changes) regarding achievement of the operational objectives.

(11) **HN/Multinational Aspects.** The presence or lack of HN/partner nation capabilities and participation desires/restrictions must be considered throughout the AADP's development.

e. **AADP Development Process**

(1) General. The AADP development process uses the existing joint planning group model, described in JP 3-33, *Joint Task Force Headquarters*, that is charged with writing deliberate plans and orders for the JFC. The AADP development process focuses on the efforts of CCMD AMD working groups and is useful for both intra-AOR/CCMD and cross-AOR/CCMD AMD planning.

(2) The following are key steps in developing the AADP:

(a) Analyze AMD guidance and information.

(b) Provide DCA estimate and situation description.

(c) Synthesize functional component inputs, including forces available.

(d) Provide AADC mission statement, intent and CONOPS.

(e) Conduct CAL analysis.

(f) Review CVT results and finalize the DAL.

(g) Manage, update, and coordinate the DAL.

(h) Provide AMD C2 guidance.

(i) Draft the AADP and appendices.

(j) Consolidate coordination of AADP with other plans.

(k) Coordinate, approve, and disseminate the AADP.

(3) Throughout development, the AADP should be rigorously analyzed with the JAOP using war gaming and other means of COA analysis, synchronized with the ACP and

SPINS, and adjusted accordingly. The AADP development process is continuous throughout an operation.

For additional information regarding the AADP, see Appendix A, "Area Air Defense Plan Format," and ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System.

SECTION B. DEFENSIVE COUNTERAIR OPERATIONS

10. General

a. **Active AD Operations.** Active AD operations are conducted in accordance with the AADP (integrated with the ACP), which includes authorities for decisions based on ROE and the establishing directive. Rapid, reliable, and secure means of ID and CID within the airspace control area facilitate the engagement decisions that may be critical to the survival of friendly forces. The integration of airspace control and the employment of air-to-air and surface-to-air weapons for AD engagements are facilitated by establishing WEZs.

b. **Active BMD Operations.** Active BMD uses sensors, SAMs, and platforms that are both unique to BMD (e.g., sea-based X-band radar, AN/TPY [Army/Navy Transportable Radar Surveillance]-2, Aegis SM-3) and those capable of both AD and BMD (e.g., AN/TPS [Army/Navy Transportable Radar Search]-59, Patriot, and Aegis SM-2 and SM-6). The active BMD mission includes use of forward-based BMD assets in the defense of the territory of the US as an augmentation to the GMD system.

(1) BMD assets and resources are under the control of the GCC/JFC to whom they are assigned or attached. Due to the short timelines involved in BMD, tasking and engagement authority should be delegated to the lowest practical level. The process and means of authorizing and directing engagements should be clearly stated in AADPs, SPINS, or other orders. Engagement coordination requires the ability to optimize BMD resources considering the operational environment, decision timelines, and the ability to detect, identify, track, and engage multiple, simultaneous missile threats.

(2) A GCC under BM attack is the supported commander for BMD in the respective AOR. This means, with multiple threat missiles of varying ranges in flight, the GCC may simultaneously be both a supported and supporting commander for BMD. The processes linking sensors to decision makers to fire control nodes that cross AOR boundaries will require coordination between neighboring GCCs to enable multiple engagement opportunities.

c. **AMD Operations**

(1) The AADC controls the battle using approved authorities (e.g., ID, commit, and engagement) and the flexibility of the IADS. To decentralize execution, the AADC will normally delegate some or all AADC authorities down to the RADC/SADC level (if established). The AADC must specify the conditions and limits within which engagement authority is decentralized. **Based upon the threat level and the complexity of engagements, a control node should retain engagement authority if it can adequately**

perform battle management. For battle management, the AADC or a RADC/SADC uses three tools for which the authorities may be delegated further down to the tactical level: air defense warning conditions (ADWCs), WCS, and fire control orders.

(a) **ADWCs.** An AD warning, which includes missile attacks, is issued as an ADWC. The ADWC is a degree of air attack probability based on the threat assessment. The AADC establishes the baseline ADWCs for the joint force. ADWC levels may be different for air-breathing threats than for BMs. RADCs/SADCs may issue higher but not lower ADWCs for their areas. ADWCs are disseminated though joint and component C2 channels to all AMD elements and fire units.

1. ADWC White—An attack by hostile aircraft or missile is improbable.

2. ADWC Yellow—An attack by hostile aircraft or missile is probable.

3. ADWC Red—An attack by hostile aircraft or missile is imminent or in progress.

4. A change to an ADWC should not automatically prescribe a specific action. Consider the following actions and force posture changes with changes to ADWC:

a. Weapons readiness.

b. Alert posture.

c. WCS.

d. Engagement criteria.

e. Asset positioning (e.g., AMD units, CAPs, and HVAA retrograde).

f. Alert aircraft (e.g., launch, upgrade posture).

g. Deny targeting (e.g., emissions control, decoys).

(b) **WCS.** WCS is a control measure that establishes the conditions under which fighters and surface AMD weapons (including small arms weapons) are permitted to engage threats. The AADC establishes WCS for the joint force. The **WCS may be different for air-breathing threats than for BMs.** WCS authority originates with the AADC and can be delegated to subordinate commanders. **Different WCSs may be applied simultaneously to different weapons systems and in different airspace areas.** US forces use three standard WCSs that may be declared for a particular area and time. Generally, US forces disseminate WCS via voice and tactical chat and not TDL. WCS dissemination means should be addressed in the AADP and amplifying guidance (e.g., SPINS, fragmentary orders). The WCSs are "free, tight, and hold."

1. Weapons Free—The least restrictive status; when any target not positively identified as friendly in accordance with current ROE may be engaged. Weapons

free zones may be established around key government infrastructure when other areas are designated weapons tight or weapons hold.

2. Weapons Tight—The normal status. Units may only fire on targets identified as hostile in accordance with current ROE.

Note: Weapons free and weapons tight control orders impose a status or condition applicable to weapons systems within a defined volume of airspace, and normally, any unit directly threatened by a missile of any type, friend or foe, may engage it.

3. Weapons Hold—The most restrictive status. Units may only fire in self-defense or when ordered by proper higher authority.

(c) **Fire Control Orders.** Fire control orders, which include both air and missile threats, are established to standardize tactical firing instructions issued during the conduct of an air battle. **They are given to direct or inhibit firing by surface-to-air weapons units based on the ROE and rapidly changing tactical situations.** Based on the ROE, the JFC-approved AADP should establish how fire control orders will be communicated. There are three primary fire control orders.

1. **"Engage"** directs or authorizes units and weapon systems to fire on a designated target.

2. **"Cease engagement"** or **"cease fire"** directs units to stop the firing sequence against a designated target; however, units may continue to track, and missiles already in flight are permitted to continue to intercept.

3. **"Hold fire"** is an emergency order used to stop firing. If technically possible, missiles already in flight must be prevented from intercepting.

(2) **Weapon Systems Employment.** Although DCA operations are defensive in nature, they should be conducted as far from friendly areas as feasible. Advanced warning of hostile air and missile actions is vital for a layered defense. Early intercepts facilitate the potential for multiple engagements. For effective attrition of enemy air and missile threats, the engagement process should continue throughout the approach, entry, and departure from the friendly operational area. Once CMs or BMs are detected, ROE normally should allow for their immediate engagement based on their unique target profiles, their potential warheads and threat to friendly assets, and the quick reaction necessary for success. **The strength of an IADS is the synchronization of the integrated surface-to-air and air-to-air systems in mutual support of defensive coverage for the operational area.**

(a) **Surface-to-Air Weapon Systems.** These weapons include SAMs, AAA, and directed energy weapons and are employed in both area and point defenses—often in self-defense. Their effectiveness requires reliable ID/CID processes, C2 connectivity, and interfaces with airborne systems to preclude engagement of friendly aircraft and unnecessary expenditure of weapons against enemy threats. Surface weapon systems have optimal capabilities against targets at different ranges and altitudes as reflected in their WEZs. In extremely dynamic AD situations with a multitude of targets, some systems are capable of

automatic detection and engagement. **Surface-to-air systems operate under fire control orders based on the ROE and WCS.**

(b) **Air-to-Air Fighter Interception.** Fighter aircraft performing DCA or OCA missions may be tasked to respond to the detection of hostile, potentially hostile, or unknown airborne targets. Aircraft normally operate under positive control of a C2 element but may initiate and conduct intercepts autonomously when authorized (e.g., self-defense), or when the depth of the operation precludes positive control. When positive control is not possible, the controlling element may provide general broadcast information on targets to all affected fighters. Air-to-air fighters operating with advanced radars can engage multiple targets with BVR weapons to defend against hostile targets before they are within threatening range of friendly assets. However, the ROE must allow use of BVR weapons.

1. AD fighter aircraft normally perform CAPs, fighter escort, or respond to airborne threats from ground alert locations. Fighters will normally be under positive control for vectors toward their airborne targets. CAPs include barrier CAPs for area defense and CAPs for base defense or local asset defense. Some CAPs also may have additional missions such as using barrier CAPs to inspect or "sanitize" returning strike packages to ensure enemy aircraft do not shadow "friendlies" back to base. Additionally, DCA fighters may be dedicated to protect HVAAs from airborne threats.

2. C2 elements provide a link between the JAOC combat operations division and the fighters. This communication link provides a flexible and reactive C2 arrangement for retasking flights to meet dynamic DCA operational requirements or to support OCA operations.

3. NAVFOR CAPs defending carrier or amphibious groups may be positioned over land during littoral operations and can provide collateral defense of the land AO.

(3) **Nonlethal Capability Deployment.** In addition to employment of lethal weapons, nonlethal capabilities, primarily EW-based, contribute to active AMD by degrading acquisition and causing the enemy to waste munitions. The guidance for employment of jammers and expendable decoys will be provided in the AADP and SPINS. Emission control status and the need to maintain tactical surprise are factors affecting the delegation of authority to employ these capabilities.

(4) **Other Employment Considerations**

(a) **Movement and Mobility.** Surface-based AMD forces are normally moveable or mobile. When operations require ground AMD units to change location, displacement times must be considered. Dependent upon the weapon system and situation, these surface unit displacements may take hours or days. Extensive coordination may be required for convoy plans, permissions, protection, realignment of logistics, travel time, and shifting of backfill forces may be necessary. Maritime forces afloat are capable of full operations while repositioning.

(b) **Cross-Boundary Operations.** Boundaries between sectors and between forces and units are areas of risk. Procedures for distribution and control of fires between sectors and units should be addressed during planning. To minimize the risk of friendly fire and prevent excessive weapons employment while providing an effective defense, coordination must be rehearsed, not just planned. When engagements cross a unit boundary or are in a buffer zone, priority of fires normally will be given to the threatened unit.

(c) **Alert Posture.** Levels of readiness should be tailored to the level of threat and warning. Crews and systems cannot be maintained at high levels of alert status indefinitely. Unless forces are actively conducting engagements or redeploying, some portion should be performing crew rest and/or maintenance. "All clear" procedures should be established when a threat no longer exists.

(d) **Transfer of Authority and Transitions in DCA Operations**

1. Transfers of C2 functions, such as airspace control, battle management authorities, etc., from one level of command or from one controlling element to another, should be accomplished smoothly, with the succeeding element not assuming C2 functions until the appropriate level of capability is in place—and rehearsed, if possible. Prior to hostilities, if possible, redundant or secondary C2 nodes should rehearse primary C2 functions.

2. Temporary transfers of authority (e.g., ID or engagement authority) should be acknowledged by delegating and receiving elements and acknowledged by their subordinates. For example, if an AWACS is given a SADC function from a CRC, their subordinate air and surface fire control units, as well as the AWACS, acknowledge the transfer. When the CRC regains that function, the AWACS and subordinates again acknowledge the transfer. In all cases the next higher C2 node also notifies and acknowledges the changes.

3. Detection of enemy offensive preparations may be a warning of an impending hostile act and signal a decision for transition from peace to combat operations. Detection of these preparations allows for the transmission of tactical warnings that alert commanders, automated weapon systems, sensors, C2 nodes, and, in some cases civil authorities, to anticipate the attack.

11. Passive Air and Missile Defense Operations

a. Passive AMD measures, to include detection, warning, camouflage, concealment, deception, dispersion, hardening, and the use of protective construction, are highly reliant on intelligence, strategic warning, and tactical warning to implement actions at the appropriate state of conflict.

b. **Responsibilities.** The AADC and chain of command are responsible for timely warning of attacks. Component commanders and their forces have delegated responsibilities to ensure passive AMD measures are planned and executed in a timely manner down to the unit level.

(1) As a minimum, the AADC must be able to pass warnings directly to the joint force's Service and functional component commands, and if applicable, establish procedures to pass warnings to and from HN authorities and multinational partners. BM warnings generally will originate from the theater event system. Airborne threat warnings generally are issued through the C2 system. Local commanders may declare local AD warnings based on the local threat.

(2) Component commanders establish and maintain communications links down to the lowest unit level.

(3) Cross-component support is a unit and component commanders' responsibility. Cross-component support may establish connectivity to geographically isolated units of other Services or MNF units that are unable to link within their parent organizations.

c. **Defense Clustering/Dispersal.** To facilitate the span of control for local commanders, support activities may be grouped into clusters. Grouping defended assets with AMD units or locating critical force elements near defended assets enables economy of force for protection and may enhance localized defense in depth. Clustering may also enhance the availability and contributions of HN assets. In the early stages of force projection, grouping allows any one location to draw upon the resources of the group. Conversely, dispersal complicates enemy targeting and reduces risk of collateral damage to assets less likely to be targeted by the enemy. Accordingly, clustering and dispersal actions must be carefully balanced.

SECTION C. ADDITIONAL CONSIDERATIONS

12. Global Missile Defense

a. **General.** Global MD encompasses MD operations, activities, or actions that affect more than one GCC and require planning synchronization among the affected commands to deter and prevent attacks, destroy enemy missiles, or nullify or reduce the effectiveness of an attack.

b. **Global Collaborative Planning Process**

(1) Global MD utilizes collaborative planning that provides GCCs with the ability to coordinate cross-AOR MD in multiple theaters. MD planning is complex and requires MD planners trained to integrate and synchronize diverse MD units and systems from multiple components and CCMDs supporting each other. Planners balance competing requirements for scarce resources and those categorized as high demand/low density strategic resources.

For additional information regarding multi-AOR planning, see ATP 3-01.15 [FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques and Procedures for an Integrated Air Defense System.

(2) **Missile Defense Global Synchronization Board**. The Missile Defense Global Synchronization Board is chartered to resolve issues related to global MD plans, operational

planning guidance or policy, plans assessments, and GFM. Deputy CDRUSSTRATCOM chairs this warfighter-centric forum, which includes general/flag officers from the CCMD Operations and Plans directorates, the Joint Staff, the Services, Missile Defense Agency (MDA), Joint Integrated Air and Missile Defense Organization, Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD), and the Office of the Secretary of Defense. CCDRs retain the prerogative to elevate irreconcilable issues to the SecDef.

(3) **Global Synchronization of MD Plans.** CDRUSSTRATCOM maintains situational awareness; performs globally focused, cross-AOR analysis; and develops inputs, recommendations, and assessments. These assessments are conducted on the premise that plans are likely to be executed concurrently by two or more CCMDs to counter a single adversary. This adversary-centric approach ensures MD dependencies between plans are clearly identified. Assessment analysis helps articulate risk from a global standpoint and influences processes which inform global strike planning, materiel and non-material requirements and solutions, GFM decisions, and allied/partner capability integration.

(4) **MD GFM.** Most MD resources are high demand/low density. SecDef will assign or allocate forces to respective GCCs as required for MD using standard GFM processes.

(a) **Global Force Management Allocation Plan.** SecDef allocates MD forces annually through the Global Force Management Allocation Plan and modifications can be made through a request for forces. CCDRs submit requests for forces to support emerging or crisis-based operational requirements to SecDef via the CJCS.

(b) **MD Joint Functional Manager.** USSTRATCOM, as the MD Joint Functional Manager, identifies, develops, and recommends globally optimized sourcing solutions for DOD MD capabilities in coordination with DOD joint force providers, Services, other CCDRs, MDA, and other DOD agencies. JFCC-IMD, through USSTRATCOM, is responsible for identifying and recommending MD assets in response to the requirements of the GCCs. In support of its Joint Functional Manager role and responsibilities, USSTRATCOM, in coordination with the Joint Staff, CCMDs, and the Defense Intelligence Agency, will build and maintain the Global PDAL, to include codification, modification, and publication of the CVT methodology utilized to categorize defended assets.

For additional information on synchronization of MD plans and MD GFM, see the Global Missile Defense Concept of Operations.

c. **Global MD Operations.** Employment of global MD forces and resources will be decentralized under the control of the GCC or JFC to whom they are assigned or attached. Tasking and engagement authority will be delegated to the lowest practical level consistent with the ROE, the DAL, the AADP, and the authority of the JFC. The one exception to decentralized execution of MD is for homeland MD, using the GMD system, which requires positive direction from the WRA delegated from the President.

For additional information on global strike support to global MD, refer to Chapter IV, "Offensive Planning and Operations," Section C, "Global Considerations for Offense."

13. Counter-Rockets, Artillery, and Mortars

C-RAM is a mission to detect and engage incoming RAM in order to protect friendly forces and HVAs, as well as provide advanced warning to affected areas. C2 for C-RAM operations is normally the responsibility of the local base defense operations center or the tactical operations center. C-RAM units receive and provide situational awareness to and from airspace users to ensure friendly protection. Units that perform the C-RAM mission are normally air defense units, but are not generally considered part of the centralized joint AMD network.

APPENDIX A
AREA AIR DEFENSE PLAN FORMAT

Copy No.

Issuing Headquarters

Place of Issue

Date/Time Group of Signature

AREA AIR DEFENSE PLAN: Operation/Exercise NUMBER OR CODE NAME

References: Maps, charts, and other relevant documents.

TABLE OF CONTENTS

1. Situation

Briefly describe the situation the plan addresses. The related OPLAN or concept plan, as well as any other applicable OPLAN/AADP that may apply, should be identified as appropriate. Include a description of the conditions under which the guidance and procedures in the AADP are applicable (e.g., the exercise, OPLAN, OPORD, military operation, coordination between air and ground defense forces).

a. Guidance. Provide a summary of directives, letters of instructions, memorandums, treaties, and strategic plans, including any campaign/OPLANs received from higher authority, that apply to the plan.

b. Enemy Order of Battle. Provide a reference to the intelligence annex of the governing plan and/or a top-level summary of pertinent intelligence data, including information on the following:

(1) Composition, location, disposition, movements, and strengths of major enemy forces that can influence action in the operational area.

(2) Definition of threat axes, DCA operations, known WMD, and estimated enemy COAs.

(3) Known IPB for the operational area.

(4) Enemy vulnerabilities, COGs, and decisive points.

c. Friendly Order of Battle. State information on friendly forces assigned.

(1) Describe friendly AD forces, including C2, aircraft (including counterair, reconnaissance, surveillance, and support), location of SAM units, and support forces.

(2) Describe MD forces, including those with both AD and BMD capabilities.

(3) Describe BM defense system capabilities if any are located within the JOA or can support the JFC.

d. Non-Allied Forces

(1) Describe neutral forces and associated AD and BMD capabilities in or near the theater that could impact operations. Include general statement and any specific information about COAs and WMD capabilities. Include air and sea routes, shipping lanes, location of SAM units, and ATC information.

(2) Describe civilians in or near the theater that could impact operations. Include information on shipping lanes and international air traffic, if known.

2. Mission

State the joint AMD tasks and the purposes and their relationships to achieving the AADC's objectives.

3. Air and Missile Defense Operations

a. Intent

b. CONOPS. Describe the CONOPS, including the mission assumptions, maintenance policies, and JOA within which the AADP applies.

(1) AMD organization—defended area, regions, and sectors identified, including boundaries. Air and surface sensors, shooters, and C2.

(2) Provide or reference the list of critical assets to be defended (with asset criticality) with respect to campaign phase and timing within the campaign phase.

(3) Designation of prioritized defended assets with their associated levels of protection as approved by the JFC. May include specific responsibilities of defending commander and allocation of forces.

(4) AMD forces deployed locations overview.

(5) Phases of AMD in relation to the plan.

(6) Timing and duration of phases.

c. Coordinating Instructions

(1) Describe the integrating policy, including the philosophy of the weapons control plan and interfaces between commanders at various levels. Include plans and procedures for employing air control units and missile control units. Also include a list of vital areas and target priorities policy and guidance, as well as return to ship/base procedures. Generally describe the passive AMD warning responsibilities, including MNF and HN notifications, with reference to Appendixes 1 and 3, in Annex C (Operations) of the AADP.

(2) Describe Weapons Coordination Policy and Code Words. Describe preplanned responses to tactical situations, including lost communications, approach of hostile aircraft or low/slow fliers, anti-ship CM/land attack CM launch/detection, transporter/erector/launcher detection or BM launch, reconnaissance aircraft detection, adverse weather, and detection of TSTs.

(3) ROE

(a) Include ID and CID procedures and requirements and deconfliction procedures.

(b) Describe the ROE's impact and constraints on joint AMD operations.

(4) Describe reporting requirements, including the ATO, SPINS, ACO, TACOPDAT, daily intentions messages, OPTASKLINK, and status reports.

(5) Describe/discuss interaction between AMD operations and procedures and the ACP.

4. Logistics

Give references to where this information is maintained.

5. Command, Control, and Communications

a. Command Relationships. State the planned C2 structure for the entire joint AMD operation. Indicate any transfer of forces contemplated during the AMD operations, including the time of expected transfer. Give locations of all pertinent C2 agency locations and command posts for various commanders.

b. Communications. State where to find the communications plan(s).

c. Command Designators. If certain terms or code words are an integral part of a Service's DCA lexicon, be sure to define or explain them; for example, the Navy uses "Red Crown" for its airspace control center.

6. Area Air Defense Plan Guidance

The AADP is developed in collaboration with the JFC, component commanders, and MNF partners. Although the AADP is designed to be the AADC's plan of action, it is a "living" document. RADC/SADC may wish to provide supplements to the plan to reflect additional guidance or intentions. While the AADP includes topics for discussion, it may be written to reflect greater or lesser detail and may serve as a reference document to point users to other more detailed messages like the TACOPDAT, OPTASKLINK, SPINS, ATO/ACO, etc.

(Signed) (Commander—AADC)

ANNEXES: (List of notional AADP annexes, appendices, and tabs.)

Annex A: Air and Missile Defense Task Organization

Annex B: Intelligence

Annex C: Operations

- Appendix 1: Launch Warning Reports
  - Tab A: Theater Voice Warning Report Format
  - Tab B: JFACC Tier II Voice Early Warning
  - Tab C: JFLCC Tier II Voice Early Warning
  - Tab D: JFMCC Tier II Voice Early Warning
- Appendix 2: Combat Air Patrol Management and Control
- Appendix 3: Air Defense Warning Conditions
- Appendix 4: Critical Asset List/Defended Asset List
  - Tab A: Critical Asset List
  - Tab B: Phase I Defended Asset List
  - Tab C: Phase II Defended Asset List
  - Tab D: Phase III Defended Asset List
  - Tab E: Phase IV Defended Asset List
- Appendix 5: Air and Missile Defense Procedures
  - Tab A: Low Missile Procedures
  - Tab B: Fire Control Orders
  - Tab C: SAM SHORAD Tactical Order Format
  - Tab D: Alert States
  - Tab E: Weapons Control Status
  - Tab F: Air Threat Engagement Reports
  - Tab G: BM Engagement Reports

Tab H: SAM Status Report Format

Tab I: Self-Defense Criteria

Tab J: Theater Air and Missile Defense Airspace Control Order Form

Appendix 6: Flush Procedures

Appendix 7: Kill Box Grid System

Appendix 8: Commander's Critical Information Requirements

Appendix 9: OPTASKLINK

Appendix 10: RADC/SADC/Operations Centers Reports

Appendix 11: OPSEC

Annex D through Annex I: Not used

Annex J: Air Defense Command Relationships

Appendix 1: Air Defense Area, Region, and Sector Boundaries

Annex K: Command, Control, Communications, and Computer Systems

Appendix 1: JRE and C2 Voice Connectivity

Appendix 2: TDL Network

Appendix 3: JICO Cell Communications

Appendix 4: Sensor Network

Appendix 5: ADA Brigade Network 1

Appendix 6: ADA Brigade Network 2

Appendix 7: ADA Battalion Network

Appendix 8: Link 16 Network

Annex L: Coalition Forces

Appendix 1: SEW to Coalition Forces

Annex M through Annex Y: Not used

Annex Z: Distribution

Enclosure 1: References

Enclosure 2: Terms and Definitions

Enclosure 3: Acronyms

SECURITY CLASSIFICATION

APPENDIX B
DEFENSIVE COUNTERAIR ESTIMATE FORMAT

DCA ESTIMATE OF THE SITUATION

(Classification)

Headquarters

Place

Date, time, and zone

Message reference number

DCA ESTIMATE NUMBER ____

References: Maps, charts, or other documents.

Time Zone Used Through the Estimate:

1. Mission

Clearly state the task given to the AADC by the JFC and the purpose for the task. The task should describe what friendly DCA forces will do to the enemy. The purpose describes the reason for the task and should remain effective even after the task becomes outdated due to a change in the situation.

2. Situation and Considerations

This paragraph describes the conditions under which the unit will perform its mission and the possible COAs of the supported force.

a. Characteristics of the operational area. For this paragraph, determine those factors that influence friendly and enemy actions and that may influence the choice of a COA. In the absence of facts, use logical assumptions that might directly affect the mission. Include an analysis of the effects of conducting DCA operations.

(1) Weather. Put the analysis of data from predicted weather, atmospheric conditions, and solar/lunar data for the period in this paragraph. Climatological data also should be investigated when completing this paragraph. Assess how the weather influences friendly and enemy operations. For enemy operations include an evaluation of how current and forecast weather and solar/lunar data impacts enemy use of UASs, missiles, aircraft (fixed- and rotary-wing), and airborne or air assault operations. Try to determine or predict when the enemy is most likely to use those assets due to the weather.

(2) Terrain. Analyze the effects of terrain, including effects on observation and fire; cover and concealment; movement (surface and air); employment of friendly and enemy

WMD; communications, EW, and combat surveillance; unconventional warfare; military information support operations; and other aspects of military operations. Determine key terrain and air avenues of approach. Also discuss terrain features that limit air vehicle detection or target acquisition and terrain that might canalize or force air targets to fly a particular profile. Try to determine where the enemy will most probably use air assets.

(3) Other pertinent factors. List analysis of political, economic, sociological, psychological, and other factors (such as hydrographics, environment, communications, science, technology, materiel, transportation, safety and accident prevention, and manpower). Include deduction about their effects on friendly and enemy operations.

b. Enemy Air and Missile Forces

(1) Disposition. List locations of enemy air and missile forces that could participate in operations. Determine combinations of air platforms that the enemy may use when conducting a particular type of operation.

(2) Composition. How the enemy organizes for combat. Includes identity of units, types of air platforms and missiles, and armament. Also address the expected number of sorties and missiles flown per day and possible composition of those sorties.

(3) Strength. Numbers and sizes of committed and reinforcing units. Consider the enemy's location, doctrine, and mission. Identify air and missile assets and air support units that could or may affect the operations. When, where, and how many air platforms will the enemy fly during this operation?

(4) Other considerations. Enemy forces not discussed above.

(5) Recent and present significant activities. Summarize recent enemy activities that were both successful and unsuccessful. Highlight any enemy air activity, to include number, type of air platforms, and locations.

(6) Peculiarities and weaknesses. Indicate enemy peculiarities and weaknesses that might influence combat effectiveness, including vulnerability to deception.

(7) COAs. Identify available information from which to determine possible enemy COAs and their relation to the enemy's joint COA.

c. Friendly Forces. Identify disposition, composition, and strength. Highlight the vulnerability of the joint force to enemy air and missile attacks and surveillance.

(1) Friendly COAs. State the JFC's COA. Include any guidance that affects DCA operations. Include description of any phasing of operations in the COA and the impact of those operations on support relationships or requirements.

(2) Current status of resources within theater/JOA. Identify the status of personnel and logistics in the unit. Identify civil-military operations requirements. Identify limitations that affect or may affect the conduct of DCA operations. Can the mission be accomplished?

(3) Current status of other DCA resources that affect theater/JOA.

(4) Comparison of DCA requirements versus capabilities and recommended solutions.

(5) Key considerations (evaluation criteria) for COA supportability.

d. Assumptions. State the assumptions relevant to the situation, mission, forces, capabilities, threat, etc., that will affect the commanders' decisions.

3. Analysis

Analyze each COA using evaluation criteria. Identify those aspects in the JFC's plan that create difficulty in providing DCA coverage and affect the ability of the force to accomplish its mission.

4. Comparison

a. Compare COAs using evaluation criteria. Rank order COAs for each key consideration. A decision matrix should visually support comparison. Present a DCA COA for each JFC COA.

b. Each COA should include the following aspects:

(1) DCA mission.

(2) DCA priorities.

(3) DCA fires.

(4) DCA scheme of maneuver.

(5) Task organization.

(6) Command and support relationships.

(7) Key passive AMD measures.

5. Recommendations and Conclusions

a. Recommended COA based on the comparison.

(1) Indicate which joint COA(s) DCA can best support (using the elements of who, what, where, when, how, and why).

(2) Recommend list of DCA priorities.

(3) State the recommended DCA organization for combat and employment of other active DCA assets.

(4) Possible OCA targets.

(5) Passive and active DCA measures that will be most effective.

(6) Issues, deficiencies, and risks with recommendations to reduce their impacts.

b. Conclusions.

ANNEXES: (as required)

APPENDIX C
REFERENCES

The development of JP 3-01 is based upon the following primary references:

1. Strategic Guidance and Policy

a. *Ballistic Missile Defense Review Report,* February 2010.

b. *USSTRATCOM Global Missile Defense Concept of Operations, 18 March 2015.*

2. Department of Defense Publications

a. DOD Instruction 4540.01, *Use of International Airspace by US Military Aircraft and for Missile and Projectile Firings.*

b. *DOD Dictionary of Military and Associated Terms.*

3. Chairman of the Joint Chiefs of Staff Publications

a. CJCSI 3121.01B, *Standing Rules of Engagement/Standing Rules for the Use of Force for US Forces.*

b. CJCSI 3151.01C, *Global Command and Control System Common Operational Picture Reporting Requirements.*

c. CJCSM 3115.01D, *Joint Data Network (JDN) Operations: Volume I.*

d. CJCSM 6120.01F, *Joint Multi-Tactical Data Link Operating Procedures Overview.*

e. JP 1, *Doctrine for the Armed Forces of the United States.*

f. JP 2-0, *Joint Intelligence.*

g. JP 2-01, *Joint and National Intelligence Support to Military Operations.*

h. JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment.*

i. JP 3-0, *Joint Operations.*

j. JP 3-10, *Joint Security Operations in Theater.*

k. JP 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments.*

l. JP 3-12, *Cyberspace Operations.*

m. JP 3-13, *Information Operations.*

n. JP 3-13.1, *Electronic Warfare.*

o. JP 3-14, *Space Operations.*

p. JP 3-16, *Multinational Operations.*

q. JP 3-27, *Homeland Defense.*

r. JP 3-30, *Command and Control of Joint Air Operations.*

s. JP 3-31, *Command and Control for Joint Land Operations.*

t. JP 3-33, *Joint Task Force Headquarters.*

u. JP 3-40, *Countering Weapons of Mass Destruction.*

v. JP 3-52, *Joint Airspace Control.*

w. JP 5-0, *Joint Planning.*

x. JP 6-0, *Joint Communications System.*

4. Multi-Service Publications

a. ATP 3-01.4[FM 3-01.4]/MCRP 3-22.2A/NTTP 3-01.42/AFTTP 3-2.28, *Multi-Service Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses.*

b. ATP 3-01.15[FM 3-01.15]/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System* (with classified appendices).

c. ATP 3-52.2[FM 3-52.2]/MCRP 3-25F/NTTP 3-56.2/AFTTP 3-2.17, *Multi-Service Tactics, Techniques, and Procedures for the Theater Air-Ground System.*

d. ATP 3-52.1[FM 3-52.1]/MCWP 3-25.13/NTTP 3-56.4/AFTTP 3-2.78, *Multi-Service Tactics, Techniques, and Procedures for Airspace Control*.

e. Military Standard 6016C, *Tactical Data Link (TDL)*.

f. Military Standard 6016D, *Tactical Digital Information Link (TADIL) JMessage Standard.*

5. Service Publications

a. Air Force Doctrine Annex 3-01, *Counterair Operations*.

b. Air Force Doctrine Annex 3-52, *Airspace Control*.

c. FM 3-01, *US Army Air and Missile Defense Operations*.

d. FM 3-27, *Army Global Ballistic Missile Defense (GBMD) Operations*.

e. ATP 3-01.94, *Army Air and Missile Defense Command Operations.*

f. MCWP 3-22, *Antiair Warfare.*

g. MCWP 3-25, *Control of Aircraft and Missiles.*

h. NWP 3-01.01, *Fleet Air Defense*.

i. NWP 3-56, *Composite Warfare: Maritime Operations at the Tactical Level of War.*

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APPENDIX D
ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication using the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

The lead agent for this publication is the Joint Integrated Air and Missile Defense Organization. The Joint Staff doctrine sponsor for this publication is the Director for Operations (J-3).

3. Supersession

This publication supersedes JP 3-01, *Countering Air and Missile Threats,* 23 March 2012.

4. Change Recommendations

a. To provide recommendations for urgent and/or routine changes to this publication, please complete the Joint Doctrine Feedback Form located at: https://jdeis.js.mil/jdeis/jel/jp_feedback_form.pdf and e-mail it to: js.pentagon.j7.mbx.jedd-support@mail.mil.

b. When a Joint Staff directorate submits a proposal to the CJCS that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Services and other organizations are requested to notify the Joint Staff J-7 when changes to source documents reflected in this publication are initiated.

5. Lessons Learned

The Joint Lessons Learned Program (JLLP) primary objective is to enhance joint force readiness and effectiveness by contributing to improvements in doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy. The Joint Lessons Learned Information System (JLLIS) is the DOD system of record for lessons learned and facilitates the collection, tracking, management, sharing, collaborative resolution, and dissemination of lessons learned to improve the development and readiness of the joint force. The JLLP integrates with joint doctrine through the joint doctrine development process by providing lessons and lessons learned derived from operations, events, and exercises. As these inputs are incorporated into joint doctrine, they become institutionalized for future use, a major goal of the JLLP. Lessons and lessons learned are routinely sought and incorporated into draft JPs throughout formal staffing of the

development process. The JLLIS Website can be found at https://www.jllis.mil (NIPRNET) or http://www.jllis.smil.mil (SIPRNET).

6. Distribution of Publications

Local reproduction is authorized, and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified JPs must be IAW DOD Manual 5200.01, Volume 1, *DOD Information Security Program: Overview, Classification, and Declassification,* and DOD Manual 5200.01, Volume 3, *DOD Information Security Program: Protection of Classified Information.*

7. Distribution of Electronic Publications

a. Joint Staff J-7 will not print copies of JPs for distribution. Electronic versions are available on JDEIS Joint Electronic Library Plus (JEL+) at https://jdeis.js.mil/jdeis/index.jsp (NIPRNET) and http://jdeis.js.smil.mil/jdeis/index.jsp (SIPRNET), and on the JEL at http://www.dtic.mil/doctrine.

b. Only approved JPs are releasable outside the combatant commands, Services, and Joint Staff. Defense attachés may request classified JPs by sending written requests to Defense Intelligence Agency (DIA)/IE-3, 200 MacDill Blvd., Joint Base Anacostia-Bolling, Washington, DC 20340-5100.

c. JEL CD-ROM. Upon request of a joint doctrine development community member, the Joint Staff J-7 will produce and deliver one CD-ROM with current JPs. This JEL CD-ROM will be updated not less than semi-annually and when received can be locally reproduced for use within the combatant commands, Services, and combat support agencies.

GLOSSARY

PART I—ABBREVIATIONS, ACRONYMS, AND INITIALISMS

AAA	antiaircraft artillery
AADC	area air defense commander
AADP	area air defense plan
AAGS	Army air-ground system
AAM	air-to-air missile
AAMDC	Army air and missile defense command
ACA	airspace control authority
ACE	aviation combat element (USMC)
ACO	airspace control order
ACP	airspace control plan
ACS	airspace control system
AD	air defense
ADA	air defense artillery
ADAFCO	air defense artillery fire control officer
ADM	air defense measure
ADWC	air defense warning condition
AFFOR	Air Force forces
AFTTP	Air Force tactics, techniques, and procedures
AMD	air and missile defense
AMDC	air and missile defense commander
AO	area of operations
AOC	air operations center
AOR	area of responsibility
AR	air refueling
ARFOR	Army forces
ASM	air-to-surface missile
ATACMS	Army Tactical Missile System
ATC	air traffic control
ATO	air tasking order
ATP	Army techniques publication
AWACS	Airborne Warning and Control System
BCC	battle control center
BCD	battlefield coordination detachment (Army)
BDE	brigade
BM	ballistic missile
BMD	ballistic missile defense
BVR	beyond visual range
C2	command and control
CAL	critical asset list
CAP	combat air patrol
CAS	close air support

CBRN	chemical, biological, radiological, and nuclear
CCDR	combatant commander
CCMD	combatant command
CDRJSOTF	commander, joint special operations task force
CDRUSCENTCOM	Commander, United States Central Command
CDRUSNORTHCOM	Commander, United States Northern Command
CDRUSPACOM	Commander, United States Pacific Command
CDRUSSTRATCOM	Commander, United States Strategic Command
CID	combat identification
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CJCSM	Chairman of the Joint Chiefs of Staff manual
CJE	component joint data networks operations officer equivalent
CM	cruise missile
CO	cyberspace operations
COA	course of action
COG	center of gravity
COMNET	communications network
CONOPS	concept of operations
COP	common operational picture
C-RAM	counter-rocket, artillery, mortar
CRC	control and reporting center
CTF IAMD	commander, task force integrated air and missile defense
CTP	common tactical picture
C-UAS	counter-unmanned aircraft system
CVT	criticality-vulnerability-threat
CWC	composite warfare commander
DAADC	deputy area air defense commander
DAL	defended asset list
DCA	defensive counterair
DCO	defensive cyberspace operations
DOD	Department of Defense
DODIN	Department of Defense information network
EA	electronic attack
EMP	electromagnetic pulse
EMS	electromagnetic spectrum
EW	electronic warfare
EWC	electronic warfare cell
EXORD	execute order
FEZ	fighter engagement zone
FM	field manual (Army)
FOB	forward operating base

FSCL	fire support coordination line
FSCM	fire support coordination measure
GCC	geographic combatant commander
GCE	ground combat element (USMC)
GCI	ground control intercept
GFM	global force management
GMD	ground-based midcourse defense
HD	homeland defense
HIMEZ	high-altitude missile engagement zone
HN	host nation
HVA	high-value asset
HVAA	high-value airborne asset
IADS	integrated air defense system
IAMD	integrated air and missile defense
ICBM	intercontinental ballistic missile
ID	identification
IDF	indirect fire
IFF	identification, friend or foe
IPB	intelligence preparation of the battlespace
IRBM	intermediate-range ballistic missile
IRC	information-related capability
ISR	intelligence, surveillance, and reconnaissance
J-2	intelligence directorate of a joint staff
J-3	operations directorate of a joint staff
JACCE	joint air component coordination element
JAOC	joint air operations center
JAOP	joint air operations plan
JDN	joint data network
JDNO	joint data network operations officer
JEZ	joint engagement zone
JFACC	joint force air component commander
JFC	joint force commander
JFCC-IMD	Joint Functional Component Command for Integrated Missile Defense
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JFMO	joint frequency management office
JFSOCC	joint force special operations component commander
JICO	joint interface control officer
JIPOE	joint intelligence preparation of the operational environment
JOA	joint operations area

JP	joint publication
JRFL	joint restricted frequency list
JSA	joint security area
JSTARS	Joint Surveillance Target Attack Radar System
JTF	joint task force
JTWG	joint targeting working group
LAD	launch area denied
LOMEZ	low-altitude missile engagement zone
LSS	low, slow, and small
MAAP	master air attack plan
MAGTF	Marine air-ground task force
MANPADS	man-portable air defense system
MARFOR	Marine Corps forces
Marine TACC	Marine Corps tactical air command center
MARLE	Marine liaison element
MCRP	Marine Corps reference publication
MCTP	Marine Corps tactical publication
MCWP	Marine Corps warfighting publication
MD	missile defense
MDA	Missile Defense Agency
MEZ	missile engagement zone
MNF	multinational force
MNFC	multinational force commander
MOC	maritime operations center
MRR	minimum-risk route
MTN	multi-tactical data link network
NALE	naval and amphibious liaison element
NAVFOR	Navy forces
Navy TACC	Navy tactical air control center
NCC	Navy component commander
NFC	numbered fleet commander
NORAD	North American Aerospace Defense Command
NRT	near real time
NTACS	Navy tactical air control system
NTTP	Navy tactics, techniques, and procedures
NWP	Navy warfare publication
OCA	offensive counterair
OCO	offensive cyberspace operations
ONE	Operation NOBLE EAGLE
OPCON	operational control
OPLAN	operation plan
OPORD	operation order

OPSEC	operations security
OPTASKLINK	operations task link
PDAL	prioritized defended asset list
PED	processing, exploitation, and dissemination
PID	positive identification
RADC	regional air defense commander
RAM	rockets, artillery, and mortars
RICO	regional interface control officer
ROE	rules of engagement
RUF	rules for the use of force
SADC	sector air defense commander
SAM	surface-to-air missile
SCA	space coordinating authority
SEAD	suppression of enemy air defenses
SecDef	Secretary of Defense
SEW	shared early warning
SHORAD	short-range air defense
SHORADEZ	short-range air defense engagement zone
SICO	sector interface control officer
SLS	shoot-look-shoot
SM	standard missile
SOF	special operations forces
SOLE	special operations liaison element
SPINS	special instructions
SSM	surface-to-surface missile
TAAMDCOORD	theater Army air and missile defense coordinator
TACON	tactical control
TACP	tactical air control party
TACS	theater air control system
TAGS	theater air-ground system
TAOC	tactical air operations center (USMC)
TDL	tactical data link
TES	theater event system
THAAD	Terminal High Altitude Area Defense
TMM	transregional, multi-domain, and multi-functional
TST	time-sensitive target
UA	unmanned aircraft
UAS	unmanned aircraft system
UCP	Unified Command Plan
USG	United States Government
USNORTHCOM	United States Northern Command

USPACOM	United States Pacific Command
USSTRATCOM	United States Strategic Command
WCS	weapons control status
WEZ	weapon engagement zone
WMD	weapons of mass destruction
WRA	weapons release authority

PART II—TERMS AND DEFINITIONS

active air defense. None. (Approved for removal from the DOD Dictionary.)

Aegis. None. (Approved for removal from the DOD Dictionary.)

air and missile defense. Direct [active and passive] defensive actions taken to destroy, nullify, or reduce the effectiveness of hostile air and ballistic missile threats against friendly forces and assets. Also called **AMD.** (DOD Dictionary. SOURCE: JP 3-01)

airborne alert. A state of aircraft readiness wherein combat-equipped aircraft are airborne and ready for immediate action to reduce reaction time and to increase survivability. (DOD Dictionary. SOURCE: JP 3-01)

air-breathing missile. None. (Approved for removal from the DOD Dictionary.)

air defense. Defensive measures designed to destroy attacking enemy aircraft or aerodynamic missiles, or to nullify or reduce the effectiveness of such attack. Also called **AD.** (Approved for incorporation into the DOD Dictionary.)

air defense area. 1. overseas—A specifically defined airspace for which air defense must be planned and provided. 2. United States—Airspace of defined dimensions designated by the appropriate agency within which the ready control of airborne vehicles is required in the interest of national security during an air defense emergency. (DOD Dictionary. SOURCE: JP 3-01)

air defense artillery. Weapons and equipment for actively combating air targets from the ground. Also called **ADA.** (DOD Dictionary. SOURCE: JP 3-01)

air defense region. A geographical subdivision of an air defense area. (DOD Dictionary. SOURCE: JP 3-01)

air defense sector. A geographical subdivision of an air defense region (DOD Dictionary. SOURCE: JP 3-01)

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

airspace control area. Airspace that is laterally defined by the boundaries of the operational area and may be subdivided into sectors. (Approved for incorporation into the DOD Dictionary.)

air superiority. That degree of control of the air by one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats. (Approved for incorporation into the DOD Dictionary.)

air supremacy. That degree of control of the air wherein the opposing force is incapable of effective interference within the operational area using air and missile threats. (Approved for incorporation into the DOD Dictionary.)

antiradiation missile. A missile which homes passively on a radiation source. Also called **ARM.** (DOD Dictionary. SOURCE: JP 3-01)

area air defense commander. The component commander with the preponderance of air defense capability and the required command, control, and communications capabilities who is assigned by the joint force commander to plan and execute integrated air defense operations. Also called **AADC.** (DOD Dictionary. SOURCE: JP 3-01)

ascent phase. That portion of the flight of a ballistic missile or space vehicle that begins after powered flight and ends just prior to apogee. (DOD Dictionary. SOURCE: JP 3-01)

autonomous operation. In air defense, the mode of operation assumed by a unit after it has lost all communications with higher echelons forcing the unit commander to assume full responsibility for control of weapons and engagement of hostile targets. (DOD Dictionary. SOURCE: JP 3-01)

ballistic missile. Any missile that does not rely upon aerodynamic surfaces to produce lift and consequently follows a ballistic trajectory when thrust is terminated. Also called **BM.** (Approved for incorporation into the DOD Dictionary.)

barrier combat air patrol. One or more divisions or elements of fighter aircraft employed between a force and an objective area as a barrier across the probable direction of enemy attack. (DOD Dictionary. SOURCE: JP 3-01)

battle management. The management of activities within the operational environment based on the commands, direction, and guidance given by appropriate authority. (DOD Dictionary. SOURCE: JP 3-01)

boost phase. That portion of the flight of a ballistic missile or space vehicle during which the booster and sustainer engines operate. (DOD Dictionary. SOURCE: JP 3-01)

buffer zone. 1. A defined area controlled by a peace operations force from which disputing or belligerent forces have been excluded. Also called area of separation in some United Nations operations. Also called **BZ.** (JP 3-07.3) 2. A designated area used for safety in military operations. (DOD Dictionary. SOURCE: JP 3-01)

centralized control. 1. In air defense, the control mode whereby a higher echelon makes direct target assignments to fire units. (JP 3-01) 2. In joint air operations, placing within one commander the responsibility and authority for planning, directing, and

coordinating a military operation or group/category of operations. (DOD Dictionary. SOURCE: JP 3-30)

close-range ballistic missile. A land-based ballistic missile with a range capability up to 300 nautical miles. Also called **CRBM.** (Approved for inclusion in the DOD Dictionary.)

combat air patrol. An aircraft patrol provided over an objective area, the force protected, the critical area of a combat zone, or in an air defense area, for the purpose of intercepting and destroying hostile aircraft before they reach their targets. Also called **CAP.** (DOD Dictionary. SOURCE: JP 3-01)

combat surveillance. A continuous, all-weather, day-and-night, systematic watch over the battle area in order to provide timely information for tactical combat operations. (DOD Dictionary. SOURCE: JP 3-01)

commit. The process of assigning one or more aircraft or surface-to-air missile units to prepare to engage an entity, prior to authorizing such engagement. (DOD Dictionary. SOURCE: JP 3-01)

common tactical picture. An accurate and complete display of relevant tactical data that integrates tactical information from the multi-tactical data link network, ground network, intelligence network, and sensor networks. Also called **CTP.** (DOD Dictionary. SOURCE: JP 3-01)

counterair. A mission at the theater level that integrates offensive and defensive operations to attain and maintain a desired degree of control of the air and protection by neutralizing or destroying enemy aircraft and missiles, both before and after launch. (Approved for incorporation into the DOD Dictionary.)

critical asset list. A prioritized list of assets or areas, normally identified by phase of the operation and approved by the joint force commander, that should be defended against air and missile threats. Also called **CAL.** (DOD Dictionary. SOURCE: JP 3-01)

cruise missile. A guided and powered missile that flies at constant speed for the majority of its route and relies upon aerodynamic forces for lift. Also called **CM.** (Approved for incorporation into the DOD Dictionary.)

decentralized control. In air defense, the normal mode whereby a higher echelon monitors unit actions, making direct target assignments to units only when necessary to ensure proper fire distribution or to prevent engagement of friendly aircraft. (DOD Dictionary. SOURCE: JP 3-01)

defended asset list. A listing of those assets from the critical asset list prioritized by the joint force commander to be defended with the resources available. Also called **DAL.** (DOD Dictionary. SOURCE: JP 3-01)

defensive counterair. All defensive measures designed to neutralize or destroy enemy forces attempting to penetrate or attack through friendly airspace. Also called **DCA.** (DOD Dictionary. SOURCE: JP 3-01)

dispersal. Relocation of forces for the purpose of increasing survivability. (DOD Dictionary. SOURCE: JP 3-01)

dispersal airfield. None. (Approved for removal from the DOD Dictionary.)

early warning. Early notification of the launch or approach of unknown weapons or weapons carriers. Also called **EW.** (DOD Dictionary. SOURCE: JP 3-01)

engage. 1. In air and missile defense, a fire control order used to direct or authorize units and/or weapon systems to attack a designated target. (JP 3-01) 2. To bring the enemy under fire. (JP 3-09.3) (Approved for incorporation into the DOD Dictionary.)

engagement. 1. An attack against an air or missile threat. (JP 3-01) 2. A tactical conflict, usually between opposing lower echelons maneuver forces. (JP 3-0) (Approved for incorporation into the DOD Dictionary.)

engagement authority. An authority vested with a joint force commander that may be delegated to a subordinate commander, that permits an engagement decision. (DOD Dictionary. SOURCE: JP 3-01)

engage on remote. Use of nonorganic sensor or ballistic missile defense system track data to launch weapon and complete engagement. Also called **EOR.** (Approved for inclusion in the DOD Dictionary.)

fighter engagement zone. In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with fighter aircraft. Also called **FEZ.** (DOD Dictionary. SOURCE: JP 3-01)

fighter escort. An offensive counterair operation providing dedicated protection sorties by air-to-air capable fighters in support of other offensive air and air support missions over enemy territory, or in a defensive counterair role to protect high value airborne assets. (DOD Dictionary. SOURCE: JP 3-01)

fighter sweep. An offensive mission by fighter aircraft to seek out and destroy enemy aircraft or targets of opportunity in a designated area. (DOD Dictionary. SOURCE: JP 3-01)

friendly. A contact positively identified as a friend using identification, friend or foe and other techniques. (Approved for incorporation into the DOD Dictionary.)

global ballistic missile defense. None. (Approved for removal from the DOD Dictionary.)

global missile defense. Missile defense operations, activities, or actions that affect more than one combatant command and require synchronization among the affected commands to deter and prevent attacks, destroy enemy missiles, or nullify or reduce the

effectiveness of an attack. Also called **global MD.** (Approved for inclusion in the DOD Dictionary.)

ground alert. That status in which aircraft on the ground/deck are fully serviced and armed, with combat crews in readiness to take off within a specified period of time after receipt of a mission order. (DOD Dictionary. SOURCE: JP 3-01)

ground-based interceptor. A fixed-based, surface-to-air missile for defense against long-range ballistic missiles using an exo-atmospheric hit-to-kill interception of the targeted reentry vehicle in the midcourse phase of flight. (DOD Dictionary. SOURCE: JP 3-01)

ground-based midcourse defense. A surface-to-air ballistic missile defense system for exo-atmospheric midcourse phase interception of long-range ballistic missiles using the ground-based interceptors. Also called **GMD.** (DOD Dictionary. SOURCE: JP 3-01)

guided missile. An unmanned vehicle moving above the surface of the Earth whose trajectory or flight path is capable of being altered by an external or internal mechanism. (DOD Dictionary. SOURCE: JP 3-01)

high-altitude missile engagement zone. In air and missile defense, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with high-altitude surface-to-air missiles. Also called **HIMEZ.** (Approved for incorporation into the DOD Dictionary.)

high-value airborne asset protection. A defensive counterair mission using fighter escorts that defend airborne national assets which are so important that the loss of even one could seriously impact United States warfighting capabilities or provide the enemy with significant propaganda value. Also called **HVAA protection.** (Approved for replacement of "high value airborne asset protection" in the DOD Dictionary.)

hostile intent. The threat of imminent use of force against the United States, United States forces, or other designated persons or property. (DOD Dictionary. SOURCE: JP 3-01)

identification. 1. The process of determining the friendly or hostile character of an unknown detected contact. 2. In arms control, the process of determining which nation is responsible for the detected violations of any arms control measure. 3. In ground combat operations, discrimination between recognizable objects as being friendly or enemy, or the name that belongs to the object as a member of a class. Also called **ID.** (DOD Dictionary. SOURCE: JP 3-01)

integrated air and missile defense. The integration of capabilities and overlapping operations to defend the homeland and United States national interests, protect the joint force, and enable freedom of action by negating an enemy's ability to create adverse effects from their air and missile capabilities. Also called **IAMD.** (Approved for incorporation into the DOD Dictionary.)

intercontinental ballistic missile. A long-range ballistic missile with a range capability greater than 3,000 nautical miles. Also called **ICBM.** (Approved for incorporation into the DOD Dictionary.)

intermediate-range ballistic missile. A ballistic missile with a range capability from 1,500 to 3,000 nautical miles. Also called **IRBM.** (Approved for incorporation into the DOD Dictionary.)

joint data network operations officer. The joint task force operations directorate officer responsible to the commander for integrating data from supporting components into a common database used to generate the common tactical picture. Also called **JDNO.** (DOD Dictionary. SOURCE: JP 3-01)

joint engagement zone. In air and missile defense, that airspace of defined dimensions within which multiple air and missile defense systems (surface-to-air missiles and aircraft) are simultaneously employed to engage air and missile threats. Also called **JEZ.** (Approved for incorporation into the DOD Dictionary.)

joint interface control officer. The senior interface control officer for multi-tactical data link networks in the joint force who is responsible for development and validation of the architecture, joint interoperability and management of the multi-tactical data link networks, and overseeing operations of a joint interface control cell. Also called **JICO.** (DOD Dictionary. SOURCE: JP 3-01)

launch area denied. The geographic area from which an enemy targeting a designated defended area cannot launch a ballistic missile without it being engaged by the ballistic missile defenses. Also called **LAD.** (Approved for inclusion in the DOD Dictionary.)

launch on remote. Use of nonorganic sensor data or ballistic missile defense system track to launch a weapon, with additional data provided by a different sensor(s) to complete the engagement. Also called **LOR.** (Approved for inclusion in the DOD Dictionary.)

low-altitude missile engagement zone. In air and missile defense, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with low- to medium-altitude surface-to-air missiles. Also called **LOMEZ.** (Approved for incorporation into the DOD Dictionary.)

medium-range ballistic missile. A ballistic missile with a range capability from about 600 to 1,500 nautical miles. Also called **MRBM.** (DOD Dictionary. SOURCE: JP 3-01)

midcourse phase. That portion of the flight of a ballistic missile between the boost phase and the terminal phase. (DOD Dictionary. SOURCE: JP 3-01)

missile defense. Defensive measures designed to destroy attacking enemy missiles, or to nullify or reduce the effectiveness of such attack. Also called **MD.** (Approved for incorporation into the DOD Dictionary.)

missile engagement zone. In air and missile defense, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with surface-to-air missile systems. Also called **MEZ.** (Approved for incorporation into the DOD Dictionary.)

mode (identification, friend or foe). None. (Approved for removal from the DOD Dictionary.)

offensive counterair. Offensive operations to destroy or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, and as close to their source as possible. Also called **OCA.** (Approved for incorporation into the DOD Dictionary.)

offensive counterair attack operations. Offensive action by any part of the joint force in support of the offensive counterair mission against surface targets which contribute to the enemy's air and missile capabilities. Also called **OCA attack operations.** (DOD Dictionary. SOURCE: JP 3-01)

on-call. 1. A term used to signify that a prearranged concentration, air strike, or final protective fire may be called for. 2. Preplanned, identified force or materiel requirements without designated time-phase and destination information. (DOD Dictionary. SOURCE: JP 3-01)

passive air defense. None. (Approved for removal from the DOD Dictionary.)

Patriot. None. (Approved for removal from the DOD Dictionary.)

positive identification. An identification derived from observation and analysis of target characteristics including visual recognition, electronic support systems, non-cooperative target recognition techniques, identification friend or foe systems, or other physics-based identification techniques. Also called **PID.** (Approved for incorporation into the DOD Dictionary.)

procedural identification. An identification based on observation and analysis of target behaviors including location and trajectory, as well as compliance with airspace control measures. (DOD Dictionary. SOURCE: JP 3-01)

recognition. 1. The determination by any means of the individuality of persons, or of objects such as aircraft, ships, or tanks, or of phenomena such as communications-electronics patterns. 2. In ground combat operations, the determination that an object is similar within a category of something already known. (DOD Dictionary. SOURCE: JP 3-01)

regional air defense commander. Commander, subordinate to the area air defense commander, who is responsible for air and missile defenses in the assigned region and exercises authorities as delegated by the area air defense commander. Also called **RADC.** (DOD Dictionary. SOURCE: JP 3-01)

return to base. An order to proceed to the point indicated by the displayed information or by verbal communication. Also called **RTB.** (DOD Dictionary. SOURCE: JP 3-01)

sector air defense commander. Commander, subordinate to an area/regional air defense commander, who is responsible for air and missile defenses in the assigned sector, and exercises authorities delegated by the area/regional air defense commander. Also called **SADC.** (DOD Dictionary. SOURCE: JP 3-01)

shoot-look-shoot. A firing doctrine in which the result of the first intercept attempt is assessed prior to the launch of a subsequent interceptor. Also called **SLS.** (Approved for inclusion in the DOD Dictionary.)

short-range air defense engagement zone. In air and missile defense, that airspace of defined dimensions within which the responsibility for engagement of air and missile threats normally rests with short-range air defense weapons, and may be established within a low- or high-altitude missile engagement zone. Also called **SHORADEZ.** (Approved for incorporation into the DOD Dictionary.)

short-range ballistic missile. A ballistic missile with a range capability between 300-600 nautical miles. Also called **SRBM.** (Approved for incorporation into the DOD Dictionary.)

simultaneous engagement. The concurrent engagement of hostile targets by combination of interceptor aircraft and surface-to-air missiles. (DOD Dictionary. SOURCE: JP 3-01)

suppression. Temporary or transient degradation by an opposing force of the performance of a weapons system below the level needed to fulfill its mission objectives. (DOD Dictionary. SOURCE: JP 3-01)

suppression of enemy air defenses. Activity that neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. Also called **SEAD.** (DOD Dictionary. SOURCE: JP 3-01)

surface-to-air missile site. None. (Approved for removal from the DOD Dictionary.)

terminal phase. That portion of the flight of a ballistic missile that begins when the warhead or payload reenters the atmosphere and ends when the warhead or payload detonates, releases its submunitions, or impacts. (DOD Dictionary. SOURCE: JP 3-01)

track. 1. A series of related contacts displayed on a data display console or other display device. 2. To display or record the successive positions of a moving object. 3. To lock onto a point of radiation and obtain guidance therefrom. 4. To keep a gun properly aimed, or to point continuously a target-locating instrument at a moving target. 5. The actual path of an aircraft above or a ship on the surface of the Earth. 6. One of the two endless belts on which a full-track or half-track vehicle runs. 7. A metal part forming a path for a moving object such as the track around the inside of a vehicle for moving a mounted machine gun. (DOD Dictionary. SOURCE: JP 3-01)

track correlation. Correlating track information for identification purposes using all available data. (DOD Dictionary. SOURCE: JP 3-01)

track management. Defined set of procedures whereby the commander ensures accurate friendly and enemy unit and/or platform locations and a dissemination procedure for filtering, combining, and passing that information to higher, adjacent, and subordinate commanders. (Approved for incorporation into the DOD Dictionary.)

unknown. 1. A code meaning "information not available." 2. An unidentified target. An aircraft or ship that has not been determined to be hostile, friendly, or neutral using identification friend or foe and other techniques, but that must be tracked by air defense or naval engagement systems. 3. An identity applied to an evaluated track that has not been identified. (DOD Dictionary. SOURCE: JP 3-01)

vulnerability. 1. The susceptibility of a nation or military force to any action by any means through which its war potential or combat effectiveness may be reduced or its will to fight diminished. (JP 3-01) 2. The characteristics of a system that cause it to suffer a definite degradation (incapability to perform the designated mission) as a result of having been subjected to a certain level of effects in an unnatural (man-made) hostile environment. (JP 3-60) 3. In information operations, a weakness in information system security design, procedures, implementation, or internal controls that could be exploited to gain unauthorized access to information or an information system. (DOD Dictionary. SOURCE: JP 3-13)

weapon engagement zone. In air and missile defense, airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with a particular weapon system. Also called **WEZ.** (Approved for incorporation into the DOD Dictionary.)

weapons control status. An air and missile defense control measure declared for a particular area and time by an area air defense commander, or delegated subordinate commander, based on the rules of engagement that establish the conditions under which fighters and surface air defense weapons are permitted to engage threats. Also call **WCS.** (Approved for incorporation into the DOD Dictionary.)

weapons free zone. An air defense zone established for the protection of key assets or facilities, other than air bases, where weapon systems may be fired at any target not positively recognized as friendly. (DOD Dictionary. SOURCE: JP 3-01)

weapons readiness state. The degree of readiness of air defense weapons which can become airborne or be launched to carry out an assigned task, and normally expressed in numbers of weapons and numbers of minutes. (DOD Dictionary. SOURCE: JP 3-01)

weapons release authority. The authority originating from the President to engage or direct engagement of ballistic missile threats using the ground-based midcourse defense system. Also call **WRA.** (Approved for incorporation into the DOD Dictionary.)

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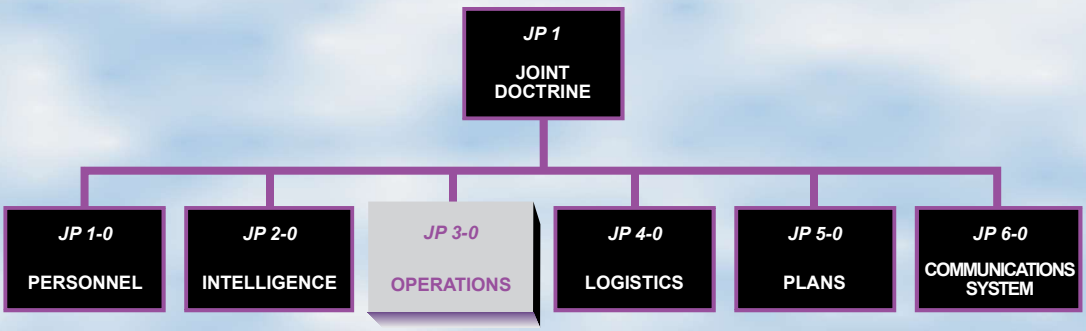

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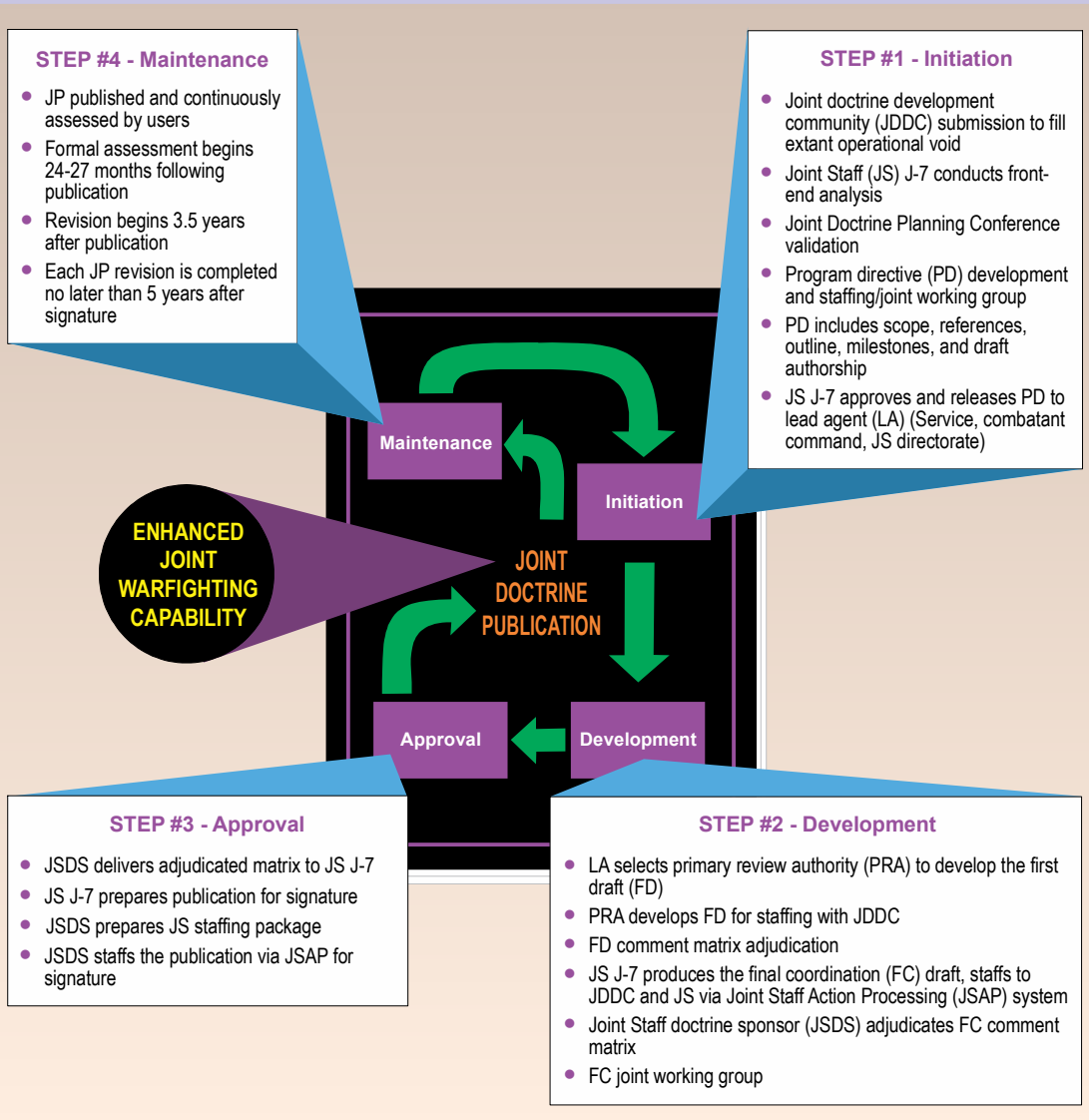


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