Joint Publication 3-01.3

Joint Doctrine for Defensive Operations for Countering Air and Missile Threats

Final Coordination
25 November 2002

PREFACE

1. Scope

This publication builds upon the foundation of joint doctrine in Joint Publication 3-01, *Joint Doctrine for Countering Air and Missile Threats*, and provides more detailed guidance on defensive operations for countering air and missile threats. This publication provides doctrine for the integration of defensive counterair (which includes operations for joint theater missile defense) capabilities to support execution of the joint force commander's (JFC's) operation order or campaign plan. It covers all defensive measures designed to detect, identify, intercept, and destroy or negate adversary forces attempting to attack or penetrate the friendly air environment. The focus is to protect against theater air and missile threats through an integrated and coordinated mix of mutually supporting measures of passive defense, active defense, and command, control, communications, computers and intelligence.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations and provides the doctrinal basis for US military involvement in multinational and interagency operations. It provides military guidance for the exercise of authority by combatant commanders and other JFCs and prescribes doctrine for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. 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 the overall mission.

3. Application

a. Doctrine and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These principles and guidance also may apply when significant forces of one Service are attached to forces of another Service or when significant forces of one Service support forces of another Service.

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 for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, 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 United States, 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:

JOHN P. ABIZAID
Lieutenant General, USA
Director, Joint Staff

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Overview

The goal of defensive counterair (DCA) operations, in concert with offensive counterair (OCA) operations, is to provide a secure area from which joint forces can operate.

Defensive counterair (DCA) is inherently joint. Therefore, joint force components, supporting combatant commanders, and multinational force capabilities must be integrated toward the common objective of neutralizing or destroying the adversary's offensive air and missile capability. Unity of effort is enabled by centralized DCA planning. A distributed, collaborative command and control (C2) environment will ensure that the integrated air defense system is integrated into the joint force commander's (JFC's) overall concept of operations and campaign objectives. Decentralized execution by the joint force components, is carefully designed, deployed and supported as directed by the JFC. Efficient battle management and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) processes and systems ensure unity of effort and a synchronized joint force capability.

As an integral part of counterair, joint theater missile defense operations and operations against tactical aircraft and missile threats must be thoroughly integrated.

In addition to passive and active defense, the joint theater missile defense incorporates planning and C2 actions to facilitate offensive counterair (OCA) attack operations. **Preemptive destruction of aircraft and missiles is more efficient and effective than engaging them in flight.**

The Threat

Adversaries will employ area denial strategies designed to prevent the buildup of US forces.

Every **"anti-access" strategy** today relies in some measure on the employment of advanced aircraft and/or missiles. These aircraft and missiles may be employed alone or in coordinated operations with other area denial capabilities. Targets may include

attacks on the infrastructure supporting US power projection capability (ports, airfields and communications networks), relevant political targets and direct assaults on military forces. In this environment the use of weapons of mass destruction cannot be ruled out.

Military aircraft and missiles can also be instruments of political coercion. Political targets include civilian population centers and government, cultural, and religious structures and locations. In addition, propaganda value exists in attacking US and multinational military forces, particularly in rear areas, to show the vulnerability of these forces.

Defensive Counterair Operational Elements

Passive air defense. Passive air defense provides individual and collective protection for friendly forces and critical assets and is the responsibility of every commander in the joint force. Passive measures include: camouflage, concealment, and deception; hardening; reconstitution; nuclear, biological, and chemical protective equipment and sheltering facilities; redundancy; detection and warning systems; dispersal; and mobility.

Active air defense. All DCA operations (e.g., aerial intercept, high value asset protection, surface-to-air missile engagements) must be under flexible C2. Conservation of resources and prevention of fratricide are essential to gain the most efficient use of limited DCA forces and extract the maximum benefit from available assets. Accurate and timely identification (ID) enhances engagement of adversary aircraft and missiles, conserves friendly resources, and reduces risk to friendly forces. Combat identification (CID) procedures and rules of engagement must allow rapid decisions that enable engagement of targets at the maximum effective range of US and multinational force weapons.

OCA and DCA operations are integrated via command, control, communications, computers, and intelligence. C2 for DCA operations must use **existing joint and component C4ISR systems and resources efficiently** to link passive air defense and active air defense operations. C2 systems and processes provide threat warning, assigns weapon systems to targets and provides targeting data. **C2 systems must provide rapid communications among all assets, and fuse intelligence, surveillance and reconnaissance data, warning systems, and weapon systems.**

Command and Control

Unity of effort, centralized planning, and decentralized execution are key considerations.

Unity of effort is necessary for effectiveness and efficiency. **Centralized planning** is essential for controlling and coordinating the efforts of the forces. **Decentralized execution** is essential because no one commander can control the detailed actions of a large number of units or individuals.

The joint force air component commander is the supported commander for counterair operations.

The JFC will normally designate a joint force air component commander (JFACC) to integrate the capabilities and C2 of joint air assets. The JFC will normally assign JFACC responsibilities to the component commander having the preponderance of air assets and capability to plan, task and control joint air operations. Since the responsibilities of a JFACC, area air defense commander (AADC) and airspace control authority (ACA) are interrelated, designating a JFACC normally negates the need for a separate AADC and ACA. If the JFC decides to assign an AADC or ACA apart from the JFACC based on the situation, close coordination between commanders is essential.

The joint force commander (JFC) designates the area air defense commander (AADC).

The JFC normally designates an AADC when conducting joint DCA operations. Normally, the AADC is the component commander with the preponderance of air defense capability and the command, control, communications, computers, and intelligence (C4I) to plan, coordinate, and execute integrated air and missile defense operations. The AADC and subordinate control centers and echelons will be granted the necessary command authority to deconflict and control engagements and to exercise battle management. Responsibilities of the AADC include (but are not limited to):

(1) Develop and promulgate a JFC-approved integrated joint area air defense plan (AADP).

(2) Develop and disseminate a plan for timely air and missile attack warning to components, forces, and civil authorities as required.

(3) Develop ID and engagement procedures appropriate to the threat.

(4) Enforce timely and accurate track reporting to enhance the integrated air picture.

(5) Establish sectors or regions as appropriate, and designate regional/sector air defense commanders as required to execute DCA operations and battle management.

(6) Appoint deputy AADCs as required to supervise complex functional component DCA plans and operations.

The JFC designates an airspace control authority.

The broad responsibilities of the ACA include coordinating, deconflicting and integrating the use of the airspace control area. The ACA develops policies and procedures for airspace control and coordination among units within the area of responsibility (AOR)/joint operations area (JOA). The airspace control system must be responsive to needs of the JFC and integrate the system of the host nation. The ACA develops the airspace control plan (ACP) and after JFC approval, promulgates it throughout the AOR/JOA. The ACP is implemented by the airspace control order (ACO) with which all components must comply. All component forces that affect joint air operations are subject to the ACO. However, centralized airspace direction does not include operational or tactical control over any DCA asset. The ACA responsibilities with regard to DCA operations include (but are not limited to):

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

(2) Develop airspace control measures that support and enhance DCA operations.

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

Planning Defensive Counterair Operations

The JFC develops his campaign focused on the adversary centers of gravity (COGs) and ensures that friendly COGs are protected.

The AADC uses assigned campaign plan tasks to develop the AADP. The AADC's amount of direct involvement depends on the time available, the personal preferences, and the experience and accessibility of the staff. The AADC uses the entire staff and component DCA staffs during planning to explore the full range of probable and likely adversary and friendly courses of action (COAs), and to analyze and compare his own capabilities with the adversary's.

Planning DCA operations involves integrating force capabilities and limitations against adversary vulnerabilities to achieve optimum results in an ever-changing tactical environment. The factors that must be taken into consideration for planning include objectives, force requirements, logistics, synchronization/timing, weapons availability, force availability, force size, and operational assessment.

Joint Intelligence Preparation of the Battlespace

Joint intelligence preparation of the battlespace helps commanders understand the adversary and select appropriate courses of action.

Joint intelligence preparation of the battlespace (JIPB) is the analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products to support the commander's (JFC's) decisionmaking process. It is a continuous process which enables JFC's and their staffs to visualize the full spectrum of adversary capabilities and potential COA across all dimensions of the battlespace.

The supporting intelligence preparation of the battlespace process is both continuous and cyclical.

Component intelligence preparation of the battlespace (IPB) focuses on the adversary's forces and operations necessary to accomplish the most likely and most dangerous COAs identified by JIPB. IPB is a four-step process — define the battlespace environment, describe the battlespace's effects, evaluate the adversary, determine adversary **potential** COAs.

Airspace Control and Engagement Zones

Basic considerations for planning airspace control are:

The primary DCA concerns with airspace control are to ensure that defensive operations are integrated with the overall airspace control plan (ACP) and that the ACP facilitates DCA and OCA synchronization.

(1) **Support the Joint Force.** Airspace control is an integral piece of the joint air operations plan; priorities stem from the JFC's priorities.

(2) **Interoperability.** Interoperability is essential to effective operations that can conserve DCA forces and munitions and to prevent fratricide.

(3) **Mass and Timing.** DCA planning needs to include consideration of the aircraft traffic volume and timing to fully integrate DCA with OCA and other missions.

(4) **Unity of Effort.** Liaison between joint force DCA elements integrates information flow and provides expertise to the designated combat zone ACAs.

(5) **Integrated Planning Cycles.** The airspace control planning cycle must be integrated with the AADP, the air tasking order and also support joint campaign and operation plans timing.

(6) **Degraded Operations.** The ACP must anticipate the results of attacks, and use of adversary electronic warfare efforts and communications degradation on system operations.

Identification

Identification authority is the authority to assign the identity of an unknown contact as friendly, hostile or neutral, if possible.

Identification is an essential and inseparable part of airspace control and air defense operations. Accurate and timely ID enhances engagement of adversary aircraft, conserves friendly resources, and reduces the risk of fratricide. CID is the accomplishment of the ID process with near real time exchange of information between all air control facilities, control units, and airspace users to meet the time and accuracy demands of combat operations. CID requires reliable voice and data nets, radars, ID friend or foe systems and selective ID features and established processes and procedures.

Area Air Defense Planning

With the support and input of Service and/or functional component commanders, the AADC develops the joint area air defense plan.

The AADP is the integration of active air defense design, passive defense measures and the C4I system to provide a comprehensive approach to defending against the threat. The plan should contain detailed weapons control and engagement procedures, be closely integrated with the ACP and facilitate a streamlined decision and coordination process. Planners must understand that they will routinely be required to modify the AADP due to the dynamic nature of joint operations. Ideally, as the operation progresses and the AADP is refined, the adversary's ability to conduct air and missile attacks will diminish, reducing the threat to the JFC's freedom of action. The AADP builds upon the DCA Estimate and should address command relationships, the adversary and friendly situation, the AADC's mission, the AADC's concept of operation, logistics, and command, control, communications, and computers requirements.

Active Air Defense Execution

The overall DCA effort must synchronize and integrate forces and capabilities from all components.

Active air defense operations include:

(1) Area defense; uses a combination of weapon systems to defend a broad area.

(2) Point defense; protects limited areas, normally in defense of vital elements of forces or installations.

(3) Self-defense; allows friendly units to defend themselves and friendly units/assets in the vicinity against direct attack or threats of attack by using organic weapons and systems.

DCA operations should attempt to intercept intruding adversary aircraft and missiles as early as possible. Although DCA operations are reactive in nature, they should be conducted as far from the friendly operational area as feasible. To ensure defeat of adversary air and missile threats, the engagement process must continue through the approach to, entry into, and departure from the friendly operational area. The key to effective DCA is rapid implementation, proper execution, and timely adaptation of the AADP. The dynamic nature of war requires DCA commanders be prepared to modify the AADP as the situation requires; they should fight the adversary rather than the plan.

Passive Air Defense Execution

Passive air defense is necessary to complete the essential individual and collective protection for friendly forces, population centers, and critical assets.

By examining adversary munitions characteristics and quantities, and their targeting process, the likelihood and timing of an attack may be estimated and passive measures can be employed before, during, and after an attack. There are four principal measures for passive air defense.

(1) **Tactical Warning.** Tactical detection and warning triggers some passive and enhances air and missile defense capabilities by decreasing weapon system reaction times. Component commanders are responsible for providing tactical warning to assigned forces and are supported by national and theater systems.

(2) **Reduce Adversary Targeting Effectiveness.** The effectiveness of an air or missile attack, or airborne surveillance can be reduced through: command and

control warfare, mobility, deception, and operations security.

(3) **Reducing vulnerability** enables units to survive an adversary attack. Measures to reduce vulnerability include: hardening the force, redundancy, dispersal, nuclear, biological, and chemical defense, and civilian training.

(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.

CONCLUSION

This publication provides doctrine for the integration of DCA (which includes operations for joint theater missile defense) capabilities to support execution of the JFC's operation order or campaign plan. It covers all defensive measures designed to detect, identify, intercept, and destroy or negate adversary forces attempting to attack or penetrate the friendly air environment. The focus is to protect against theater air and missile threats through an integrated and coordinated mix of mutually supporting measures of passive defense, active defense, and C4I.

CHAPTER I
INTRODUCTION

"There was a distinctive difference between the objectives of the opposing sides. The Germans were out to facilitate a transfer of ground troops across the Channel, to invade the country and so finish the war. . . . I was trying desperately to prevent [them] succeeding in their preparations for an invasion. . . . I had to do that by denying them control of the air."

British Air Marshal Sir Hugh Dowding
commenting on the Battle of Britain, 1940

SECTION A. THE COUNTERAIR FRAMEWORK

1. Purpose

~~**The purpose of joint counterair (CA) is to attain a desired degree of air superiority to allow freedom of action, protect the joint force and establish conditions within the area of operations (AO) for successful mission accomplishment** by providing required levels of protection for strategic entities such as population centers of allied nations, critical logistic sites, and politically sensitive assets of host nations (HNs). Additionally, to conduct offensive operations within the adversary's battlespace to deny his ability to employ air and missiles.~~ **The purpose of joint counterair (CA) is to attain the desired degree of air superiority required to accomplish assigned missions.** CA operations are conducted to gain access to the battlespace, sustain freedom of action, protect the joint force and establish conditions necessary for the joint force to conduct offensive operations. CA forces may also provide protection for entities such as the population centers, critical logistic sites, and politically sensitive assets of host nations (HN). CA is both offensive and defensive and is directed at denying or destroying the adversary's air and missile capability prior to launch, in flight, and to mitigate the effects of any weapons that elude destruction. Additionally, CA conducts offensive operations within the adversary's battlespace to deny his ability to employ aircraft and missiles. To execute this mission, the joint force commander (JFC) integrates the capabilities of each component to conduct offensive and defensive operations. Offensive counterair (OCA) operations seek to dominate the adversary's airspace and prevent the launch of threats, while defensive counterair (DCA) operations protect friendly forces and territory from adversary air and missile threats after launch. Figure I-1 depicts the CA framework.

2. Offensive Counterair

~~**Since defensive operations alone never win wars,**~~ **OCA** ~~**must**~~ **reduce**~~**s**~~ **the level of the threat that defensive forces face.** OCA consists of offensive measures to destroy, disrupt, or neutralize adversary aircraft, missiles, launch platforms, and their supporting structures and systems prior to launch or as close to the source as possible. OCA missions may employ manned or unmanned aircraft, surface-to-surface missiles (SSMs), artillery, special operations forces (SOF), or information operations (IO) against a variety of threats. These include adversary aircraft (manned or unmanned), ballistic missiles, tactical air-to-surface missiles (ASMs), and cruise missiles (CMs) (air-, land-, or sea-launched).

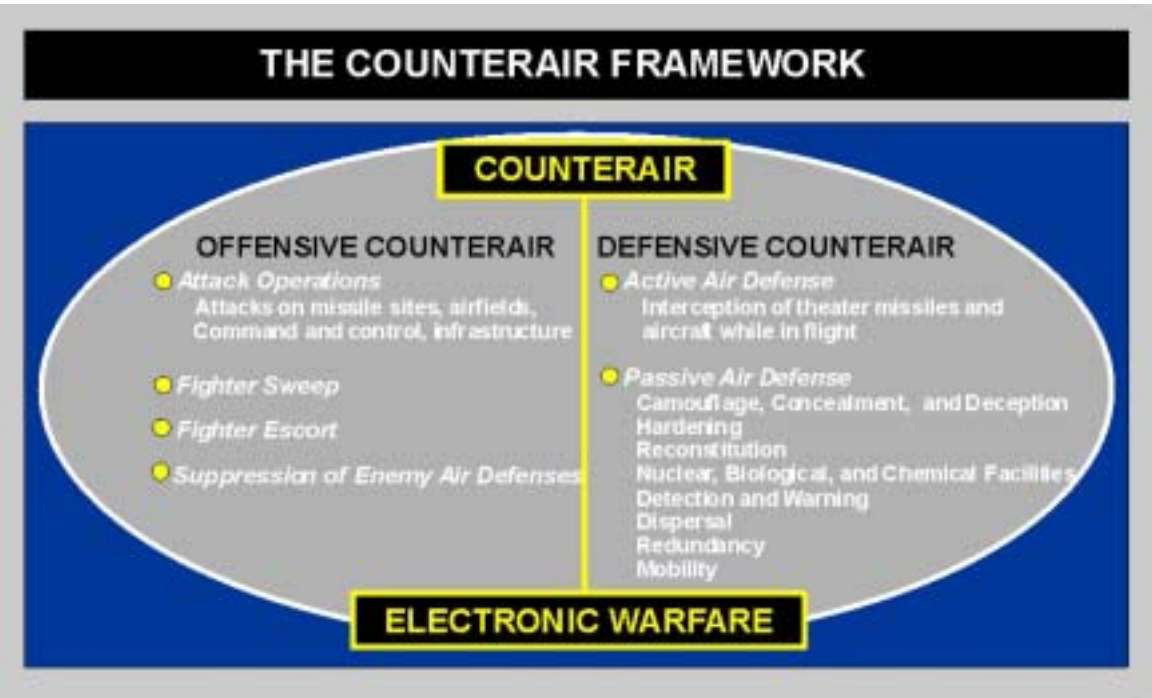

Figure I-1 The Counterair Framework

3. Defensive Counterair

a. **The goal of DCA operations, in concert with OCA operations, is to provide a secure area from which joint forces can operate.**

b. DCA is all defensive measures designed to detect, identify, intercept, and destroy or negate adversary air and missile forces attempting to surveil, attack or penetrate the friendly air environment. DCA employs both active and passive defensive measures to protect US or multinational forces (MNFs), assets, population centers, and interests.

c. **DCA operations usually begin early in the conduct of joint operations.** The immediate goal is to achieve ~~a~~ the desired degree of air superiority at the time and place of the JFC's choosing in order to allow freedom of action to execute the JFC's operation plan (OPLAN) and protect the joint force. ~~Coupled with local superiority over friendly forces and assets, this should allow j~~Joint forces should then have the ability to perform their tasks without prohibitive interference from adversary attacks. **Air superiority may not totally eliminate air and missile opposition. ~~However, some~~ Though the degree of air superiority required depends on the JFC's concept of operations, it must be achieved or the joint force will yield the initiative to the adversary.**

SECTION B. FOCUS OF DEFENSIVE COUNTERAIR

4. Threat

~~**Adversary air and missile threats continue to grow in numbers and capabilities.**~~ Noting the lessons of Desert Storm, adversaries will employ area denial strategies designed to prevent the buildup of US forces. Every "anti-access" strategy today relies in some measure on the employment of advanced aircraft and/or missiles. These aircraft and missiles may be employed alone or in coordinated operations with other area denial capabilities. Targets may include attacks on the infrastructure supporting US power projection capability (ports, airfields and communications networks), relevant political targets and direct assaults on military forces. In this environment, the use of weapons of mass destruction (WMD) cannot be ruled out. Since many ~~developing~~ nations are acquiring modern theater missiles (TMs), (CMs, theater ballistic missiles [TBMs], and ASMs), **the number of countries with an offensive air capability will continue to increase.**

a. Other trends also complicate the counterair mission. ~~The detection capabilities, engagement ranges, m~~Mobility~~,~~ and lethality of adversary TM systems and fighter aircraft have significantly increased. ~~CMs~~ Cruise missiles and unmanned aerial vehicles (UAVs) ~~present~~ are elusive targets ~~and will remain~~ difficult to detect, identify, and engage. ~~The p~~Proliferation and advances in ~~technologies~~ technology, coupled with ability to deliver ~~weapons of mass destruction (~~WMD~~)~~ make TMs and aircraft particularly difficult and dangerous threats.

b. Military aircraft and missiles can also be instruments of political coercion. Political targets include civilian population centers and government, cultural, and religious structures and locations. In addition, propaganda value exists in attacking US and multinational military forces, particularly in rear areas, ~~in order~~ to show the vulnerability ~~to attack~~ of these forces. Attacks on ~~contract troop transports, airlift~~ aircraft and ships ~~, tankers, etc.~~ at rear area "protected" ~~airfields~~ terminals and major hubs are particularly effective ~~targets due to their vulnerability and visibility~~.

c. Assessment of the threat will influence initial DCA planning. **Initial attacks may employ TMs in conjunction with aircraft attacks** against a variety of targets; air defense artillery sites, command and control (C2) elements, communications nodes, air facilities, seaports, logistic centers, key civilian facilities such as power and water plants, nuclear delivery systems, storage sites, and industrial complexes.

5. Countering the Air and Missile Threat

DCA forces perform their portion of the integrated CA effort ~~in two phases:~~ protecting the force during early entry and achieving air superiority over friendly airspace. These operations consist of active and passive air defense measures linked ~~together with~~ by a joint command, control, communications, computers, and intelligence (C4I) systems infrastructure. The basic ~~defense criteria is~~ defensive objectives are normally to detect, identify, intercept, negate, and destroy the threat.

a. **Protecting the Force.** ~~During the phases of any operation, there likely will be insufficient DCA assets present to defend every JFC designated high value asset (HVA). Those assets must be prioritized — if the DCA cannot maintain a sufficient defense of the initial entry or follow-on force, the entire campaign may be jeopardized.~~ During any operation, there may be insufficient DCA assets present to defend everything on the critical asset list (CAL), possibly even some of the JFC designated assets. If DCA cannot maintain sufficient defense of the initial entry or follow-on force, the entire campaign may be jeopardized. Therefore the CAL must be prioritized and available DCA assets applied to the highest priority assets. Those assets on the CAL covered by active air defense forces become the defended asset list (DAL). When applicable, the mobility of the DCA assets must be employed as a force multiplier.

b. **DCA is inherently joint.** Therefore, joint force components, supporting combatant commanders, and MNF capabilities must be integrated toward the common objective of neutralizing or destroying the adversary's offensive air and missile capability. Unity of effort is enabled by centralized DCA planning. A distributed, collaborative C2 environment will ensure that the integrated air defense system (IADS) is integrated into the JFC's overall concept of operations and campaign objectives. Decentralized execution by the joint force components, is carefully designed, deployed and supported as directed by the JFC. Efficient battle management and command, control, communications, computer, intelligence, surveillance, and reconnaissance (C4ISR) processes and systems ensure unity of effort and a synchronized joint force capability.

c. **Air Superiority.** As additional DCA forces arrive in theater, the DCA focus will shift from protecting critical assets to achieving air superiority. The degree of air superiority required depends on the overall situation, the JFC's concept of operations, and guidance. The degree of air superiority attained may vary over time and geography. Having ~~A~~air superiority ~~may~~ probably will not totally eliminate air and missile opposition~~.~~, ~~However, it limits~~ but will limit the adversary's ability to conduct air and missile attacks while ~~providing a more favorable environment for~~ allowing joint forces to perform their tasks without prohibitive interference.

6. Operations

DCA operations consist of active and passive air defense measures linked together within a joint C4I infrastructure. This joint C4I infrastructure must also be integrated with other systems and processes in order to support prosecution of OCA targets, including time-sensitive targets (TSTs) ~~by OCA~~, and provide timely warning of air and missile attack to the force.

a. **Active Air Defense.** All DCA operations (e.g., aerial intercept, high value asset [HVA] protection, surface-to-air missile [SAM] engagements) must be under flexible C2. Conservation of resources and prevention of fratricide are essential to gain the most efficient use of limited DCA forces and extract the maximum benefit from available assets. Accurate and timely identification (ID) enhances engagement of adversary aircraft and missiles, conserves friendly resources, and reduces risk to friendly forces. ~~However, c~~Combat identification (CID) procedures and rules of engagement (ROE) must allow rapid decisions that enable engagement of targets at the maximum effective range of US and ~~allied~~ MNF weapons.

b. **Passive Air Defense.** Passive air defense provides individual and collective protection for friendly forces and ~~critical~~ assets and is the responsibility of every commander in the joint force. ~~**The area air defense commander (AADC) is responsible for timely warning of attack,** which initiates some of the passive defense measures taken to minimize the effectiveness of attacking aircraft and missiles.~~ Passive measures include: camouflage, concealment, and deception; hardening; reconstitution; nuclear, biological, and chemical (NBC) ~~defensive~~ protective equipment and sheltering facilities; redundancy; detection and warning systems; dispersal; and mobility.

c. C2 for DCA operations must use **existing joint and component C4I systems and resources efficiently** to link passive air defense and active air defense operations. C2 systems and processes provide~~s~~ threat warning, assign weapon systems to targets and provide targeting data. **C2 systems must provide rapid communications among all assets, and fuse intelligence, surveillance and reconnaissance (ISR) data, warning systems~~,~~ and weapon systems.**

d. **Maritime Considerations.** Maritime forces operating in the littoral environment by their very nature are maneuverable, providing great operational flexibility. However, their increased proximity to land-based threats may require increased coordination ~~with joint land forces~~ between components. Interdiction, attack operations and DCA attrition of the threat becomes more critical, and naval elements must coordinate closely with land forces in the theater intelligence preparation of the battlespace (IPB), DCA, and IADS efforts. Naval vessels and aircraft may find themselves engaging in an ~~land-based~~ over-land engagement zone, subject to more restrictive procedures.

7. Integration

The capability to synchronize and integrate joint efforts is an important requirement of DCA. Components should leverage a mix of weapon systems to maximize DCA to counter the threat. Limitations of some systems may be overcome by the advantages of others. **Integration is a force multiplier** as the total capability of an integrated DCA operation is synergistic.

a. All forces engaging air and missile threats are required to conduct operations in accordance with (IAW) the JFC's priorities, plans, and procedures, ~~airspace control authority (ACA), and AADC priorities, plans and procedures~~the airspace control plan (ACP), and area air defense plan (AADP).

b. ROE must be established, disseminated, and understood. Commanders at all levels are responsible for ~~ensuring compliance~~ establishing ROE for mission accomplishment that comply with ROE of senior commanders and the standing rules of engagement (SROE). **The JFC ~~is responsible for establishing and/or implementing the ROE~~ may develop and submit for approval those supplement ROE required for mission success that require the use of force.** The JFC should request input~~s~~ and recommendations from the joint force air component commander (JFACC), area air defense commander (AADC), and component commanders. All US forces must become familiar with the Chairman of the Joint Chiefs of Staff (CJCS) ~~Standing~~

~~Rules of Engagement (~~SROE~~).~~ US forces ~~serving under foreign control must have the ability to respond IAW the CJCS SROE which apply at all times. Additionally, theater specific ROE may exist.~~ under the control of a MNF will follow ROE of the MNF unless otherwise directed by the President. US forces will be assigned and remain operational control (OPCON) to a foreign MNF commander only if the combatant commander or higher authority determine that the ROE for that MNF are consistent with US policy guidance on individual and unit self-defense as contained in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3121.01A, *Standing Rules of Engagement for US Forces*.

c. **Identification.** ~~Since ballistic missiles have a distinct flight profile, ROE for this threat should allow for immediate engagement. The AADC and ACA establish procedures within the airspace control system to positively identify all airborne assets, reduce delays in operations, and prevent fratricide. To that end, the area air defense plan (AADP) must be thoroughly coordinated and disseminated to avoid DCA operational conflicts. The AADC will grant designated subordinates the necessary authority to deconflict ID and expedite tactical C2 of engagements.~~ Designated subordinates are normally granted the necessary authority to deconflict ID and expedite tactical control (TACON) of engagements. The procedures are established within the airspace control system to positively identify or classify all airborne assets, reduce delays in operations, and prevent fratricide. The AADP and ACP must be thoroughly coordinated and disseminated to avoid operational conflicts. Since ballistic missiles have a distinct flight profile, ROE for this threat should allow for immediate engagement.

d. **Asset Protection.** Some resources or capabilities are important enough that their loss could seriously impact warfighting capabilities, or have significant political implications. Protection of these HVA should be incorporated into the AADP. HVA's may be airborne or surface.

(1) Examples of High Value Airborne Assets (HVAA) include Airborne Warning and Control System (AWACS), Rivet Joint (RJ), Joint Surveillance Target Attack Radar System (JSTARS), and Compass Call. HVAA protection should be provided by the best joint asset based on a combination of capability and availability.

(2) **High Value Surface Assets.** These are surface assets (e.g., ports, logistic bases, cities, assembly areas, carrier~~s~~ battle groups, amphibious groups) that are of high importance to friendly forces **and at risk from air and missile attack**.

(3) **Critical and Defended Asset Lists.** Component commanders, the JFC staff, and political interests involved provide asset nominations ~~for this list. The nominations~~ which are consolidated and maintained on the critical asset list ~~(CAL)~~, and prioritized to produce the JFC's priorities for ~~air and missile defense~~ DCA. The prioritized list is matched against available defensive assets. Those entities that have defensive weapons systems assigned for protection make up the DAL. The remaining nominations are constantly reevaluated for inclusion in the DAL. Component commanders are responsible for ensuring that sufficient DCA assets are assigned to protect critical assets specified by the JFC.

e. **Plans.** Centrally planned operations, and fully coordinated ~~identification~~ ID and engagement procedures are vital for avoiding duplication of effort and fratricide. ~~The ACA is responsible for coordinating joint use of the theater airspace. The ACA will publish an airspace control plan (ACP) which will be implemented by the airspace control order (ACO).~~ The ACP as stated before, is inextricably linked to the AADP ~~published by the AADC~~. The intent is to maximize combat effectiveness of the joint force while minimizing the restrictions and adverse impact on component forces and multinational partners. To accomplish this, ~~DCA operation's~~ the primary task is a plan to defeat adversary air and missile attacks. The secondary task is to do the centralized joint theater missile defense (JTMD)/DCA planning to maximize the synchronization of OCA and DCA. See the following ~~S~~section of this chapter.

SECTION C. SYNCHRONIZATION AND INTEGRATION OF OFFENSIVE AND DEFENSIVE COUNTERAIR

8. General

OCA and DCA are mutually supporting operations, which provide the freedom from attack, freedom to maneuver and the freedom to attack necessary for success in air, land, sea or space operations. Close coordination between ~~joint commanders~~ JFCs and early ~~campaign~~ planning are required to integrate both operations.

The Relationship Between Offense and Defense

Joint operations normally will include elements of both offense and defense. *. . . During initial entry operations,* ***entry forces may be required to defend*** *while force buildup occurs.* ***Even in sustained offensive operations****, selected elements of the joint force may need to pause,* ***defend****, resupply, or reconstitute, while other forces continue the attack. Further,* ***force protection includes certain defensive measures throughout the campaign****. Forces at all levels within the joint force must possess the mental agility to* ***rapidly transition between offense and defense*** *and vice versa.*

Joint Publication (JP) 3-0, *Doctrine for Joint Operations*

a. ~~Before CA, JTMD (previously covered in JP 3-01.5, *Doctrine for Joint Theater Missile Defense*) was the significant air doctrine that closely synchronized the attack with the defense. While JTMD is an integral part of CA, detailed missile defense planning to counter this specific threat is often necessary to properly synchronize and integrate the two efforts and their operational elements. The overall CA tenets of centralized planning and decentralized execution of OCA/DCA operations continue to remain key.~~ **As an integral part of CA, JTMD operations and operations against tactical aircraft and missile threats must be thoroughly integrated.** The different characteristics of aircraft and cruise and ballistic missiles may require intelligence preparation and planning efforts focused on a specific threat. Threat specific planning should then be integrated within the overall counterair effort to deconflict missions and synchronize operations.

(1) In addition to passive and active defense, JTMD incorporates planning and C2 actions to facilitate OCA attack operations. **Preemptive destruction of ~~TM's especially~~**

~~provides greater force protection than engaging them in flight.~~ aircraft and missiles is more efficient and effective than engaging them in flight. While these attacks are accomplished via offensive air or ~~land~~ surface force fires and maneuver, **the purpose is** ~~defensive~~ **force protection and these attacks must be planned and synchronized with the overall DCA scheme to maximize the effectiveness of resources**.

(2) Considerations for integrating and synchronizing OCA and DCA:

(a) A single commander with an adequate C2 system is responsible for ~~planning and executing~~ the conduct of both OCA and DCA operations. If properly organized and established this C2 system should be able to seamlessly flow assets from one mission to the other based upon the mission, phase and changing daily requirements to support the JFC and his scheme of maneuver and fires.

(b) OCA and DCA ~~operations~~ each should maximize the strengths and minimize vulnerabilities of ~~each type of~~ the other operation.

(c) The relationship between OCA and DCA is situation dependent. Under some circumstances OCA operations may ~~be~~ predominate, under others, particularly military operations other than war (MOOTW), DCA may be used exclusively.

b. Synchronization, integration and unity of effort between OCA and DCA operations are facilitated by the use of many of the same sensors, weapons, and C2 systems. Timely exchange of information, in addition to situational awareness, interoperability among C2 and intelligence nodes, and decision support tools facilitate seamless connectivity between commanders and components.

c. Interoperable systems facilitate centralized planning and decentralized execution. Architecture is a critical element in OCA/DCA synchronization and integration. C4I systems meld communications, sensors, automation, and intelligence with decision makers, operators, and weapons throughout the battlespace. They enable the joint force to simultaneously detect adversary aircraft~~,~~ and TMs ~~and air defense targets~~; to warn friendly forces; and to rapidly react to neutralize or destroy the threat.

> ***Precision Engagement*** *is the ability of joint forces to locate, surveil, discern, and track objectives or targets; select, organize, and use the correct systems; generate desired effects; assess results; and reengage with decisive speed and overwhelming operational tempo as required, throughout the full range of military operations.*
>
> **Joint Vision 2020**

The following vignette is an example of synchronized and integrated offensive counterair (OCA)/defensive counterair (DCA) mission execution.

Upon a theater ballistic missile (TBM) launch, in-theater sensors and other national assets detect the launch and begin tracking the adversary missile. These systems provide near real time ballistic missile warning, trajectory, launch point and impact point data to command and control (C2) nodes through the joint ~~theater~~ tactical ground station, and the Global Command and Control System (GCCS)~~ and Global Broadcast System~~. After launch, US Space Command provides ~~primary~~ TBM warning. Missile warning ~~infra-red~~ infrared data is processed by the theater event system which is composed of three separate, similar, and complementary ground processing elements which disseminate data over C2 nodes to tactical users and also via prearranged voice networks. Simultaneously, C2 systems alert friendly forces in the predicted TBM impact zone. Friendly forces execute active and passive air defense measures to counter the threat. A Patriot battery, which has also been exchanging tracking surveillance data with an Aegis missile cruiser through the command, control, communications, computer, intelligence, surveillance, and reconnaissance network, via~~ tactical digital information link (TADIL)~~ tactical data links, tracks the threat and launches a hit to kill the missile on the incoming TBM when it's within range. Simultaneously, joint force intelligence, surveillance, and reconnaissance (ISR) systems are cued through GCCS to acquire the adversary launch site. These systems then pass on fire-control targeting data to a designated weapons system, which is employed to destroy the mobile launcher. This seamless process should be executed in less than 10 minutes from the TBM launch. A similar scenario could apply to a package of adversary strike aircraft preparing to take off from an adversary airfield (detected by ISR assets). An OCA strike against the airfield and aircraft before they take off is the preferred method. Simultaneously, DCA forces are alerted of a potential air strike, so friendly forces can initiate active and emphasize passive air defense measures.

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CHAPTER II
COMMAND AND CONTROL

"Goldwater-Nichols established very, very clear lines of command authority and responsibility over subordinate commanders and that meant a much more effective fighting force in the Gulf. The lines of authority were clear. . . "

General H. Norman Schwarzkopf

SECTION A. RESPONSIBILITIES AND COMMAND RELATIONSHIPS

1. Joint Force Commander

A JFC has the authority to organize forces to best accomplish the assigned mission based on the concept of operations. The organization should be sufficiently flexible to meet the planned phases of contemplated operations and any development that may require a change in plan. The JFC normally exercises OPCON over all assigned or attached forces through ~~the Service~~ subordinate JFCs and Service and/or functional component commanders. The JFC will establish subordinate commands, assign responsibilities, establish or delegate appropriate command and support relationships, and establish coordinating instructions for the component commanders. Sound organization should provide for unity of effort, centralized planning and decentralized execution. **Unity of effort** is necessary for effectiveness and efficiency. **Centralized planning** is essential for controlling and coordinating the efforts of the forces. **Decentralized execution** is essential because no one commander can control the detailed actions of a large number of units or individuals.

a. **The JFC will normally designate a JFACC to integrate the capabilities and C2 of joint air assets.** The JFC will base the decision to designate a JFACC on several factors such as: JFC's overall mission, concept of operations, the mission and tasks assigned to subordinate commanders, forces available, duration and nature of joint air operations desired, and the degree of unity of C2 of joint air operations required. **The JFC will normally assign JFACC** responsibilities to the component commander having the preponderance of air assets and capability to plan, task and control joint air operations.

b. **The JFC designates the AADC.** The JFC normally designates an AADC when conducting joint DCA operations. Normally, the AADC is the component commander with the preponderance of air defense capability and the C4I to plan, coordinate, and execute integrated air and missile defense operations.

c. **The JFC designates an airspace control authority (ACA).** The broad responsibilities of the ACA include coordinating, deconflicting and integrating the use of the airspace control area. The ACA develops policies and procedures for airspace control and coordination among units within the ~~theater~~area of responsibility (AOR)/joint operations area (JOA). The airspace control system must be responsive to needs of the JFC and integrate the system of the HN. The ACA develops the ACP and after JFC approval, promulgates it throughout the ~~theater~~AOR/JOA.

d. The JFC may apportion component DCA ~~assets~~ effort to the AADC for missions and also determines the most appropriate command authority over forces made available. Typically, air and naval forces provide air assets under the AADC's TACON. Land forces and other surface active air defense units are normally provided in direct support. DCA forces that are organic to subordinate formations, such as Army Corps air defense brigades, are responsible to their parent unit for their missions but conduct tactical operations IAW ~~with~~ the AADP and ACP.

e. The JFC should establish a theater air and missile warning architecture to share warnings with joint force components and civilian agencies.

2. Joint Force Air Component Commander

a. ~~The JFACC is the supported commander for the theater/JOA counterair effort. **The functions and responsibilities of the JFACC, AADC and ACA must be integrated to ensure that OCA and DCA operations and airspace control are synchronized. The responsibilities of the JFACC, AADC and ACA are interrelated and are normally assigned to one individual, but they may be assigned to two or more individuals when the situation dictates. Based upon the situation, if the JFC decides not to assign these duties to one individual, then close coordination between the two all three positions is essential.**~~ The JFC will normally designate a JFACC to provide centralized control and unity of effort/command for joint air operations. Since the responsibilities of a JFACC, AADC and ACA are interrelated, designating a JFACC normally negates the need for a separate AADC and ACA. If the JFC decides to assign an AADC or ACA apart from the JFACC based on the situation, close coordination between commanders is essential.

b. ~~**DCA issues are usually recommended to the JFC by the JFACC in consultation with the AADC and appropriate component DCA representatives.**~~ The JFACC is the supported commander for CA operations. DCA issues, as part of the overall CA effort, are adjudicated by the JFC through the JFACC after consultation with appropriate component DCA representatives and/or an AADC if different from the JFACC. If a JFACC is not designated, DCA issues are adjudicated by the JFC through the AADC after consultation with appropriate component DCA representatives. Areas addressed include, but are not limited to:

(1) Developing theater-level DCA plans and orders.

(2) Establishing DCA command relationships.

(3) Establishing operational areas and engagement zones.

(4) Establishing levels of ~~Identification~~ ID Authority.

(5) Conducting joint IPB (JIPB) (including target nomination for OCA) ~~which~~ that supports the theater DCA operation.

(6) Ensuring support assets, such as spaced-based missile warning systems, are fully coordinated to support DCA operations.

Note: If the JFC has not designated a JFACC but has designated an AADC, the AADC should make DCA recommendations to the JFC after consultation with appropriate DCA representatives.

3. Area Air Defense Commander

a. The AADC must have the C4I capability to plan, coordinate, and execute integrated air and missile defense operations and real time battle management. Successful operations require comprehensive integration of all available component DCA ~~air and missile defense system~~ systems, appropriate passive defense measures and centralized ~~antimissile defense (AMD)~~ DCA planning. The AADC and ~~his~~ subordinate control centers and echelons **will be granted the necessary command authority to deconflict and control engagements and to exercise battle management**.

b. Responsibilities of the AADC include, but are not limited to:

(1) Develop and promulgate a JFC approved integrated joint AADP.

(2) In consultation with the ~~O~~operations ~~D~~directorate of a joint staff (J-3), ~~I~~intelligence ~~D~~directorate of a joint staff (J-2), and ~~C~~command, ~~C~~control, ~~C~~communications, and ~~C~~computer ~~S~~systems ~~D~~directorate of a joint staff develop and disseminate a plan for timely air and missile attack warning to ~~Service~~ components, forces, and civil authorities as required.

(3) Develop ~~identification~~ ID and engagement procedures appropriate to the threat.

(4) Enforce timely and accurate track reporting to enhance the integrated air picture.

(5) Establish sectors or regions as appropriate, and designate ~~a~~ regional/sector air defense commanders (RADCs/SADCs) as required to execute DCA operations and battle management.

(6) Appoint ~~functional D~~deputy AADC~~'~~s (DAADCs) as required to supervise complex functional component ~~AMD~~ DCA plans and operations.

c. A DAADC supervises ~~or directs~~ complex DCA operations within the Service or functional component~~s~~ and advises the AADC on proper employment of Service assets. ~~For this purpose DAADCs do not have joint command authority, but serve as~~ DAADCs normally serve as their components' DCA advisors to ~~their component commander and~~ the AADC on the proper employment of assets. For example, ~~when Army Forces (ARFOR) have both Corps and echelon above corps (EAC) air defense units in theater,~~ the Commander, Army Air and Missile Defense Command (AAMDC) is commonly designated as a DAADC to integrate ground missile support to both the Army forces (ARFOR) and the AADC. Similarly, other Service

components should be prepared to be assigned ~~as~~ a DAADC when the nature of the operation is complex and the need exists.

Note: The ~~B~~battlefield ~~C~~coordination ~~D~~detachment (BCD), normally deployed from the Army to the Air Force air operations center, is only a liaison element. Although the BCD has an air defense section, responsibility to integrate the ARFOR air and missile defenses resides with the senior Air Defense Artillery commander.

d. **RADC/SADC.** During complex ~~air and missile defense~~ DCA operations or operations conducted in a large theater of operations, the AADC may delegate specific functions to a RADC/SADC. These can include execution of the DCA operations within an assigned region or sector IAW the JFC ~~operational~~ concept of operations and guidance from the AADC. The AADC may also delegate certain planning functions to a RADC/SADC concerning the deployment of air and surface DCA assets. ~~In certain instances the JFC and AADC may establish a formal command or support relationship between a RADC/SADC and its assigned assets and the commander of a joint or operational area.~~ In all cases, the AADC should establish clear guidance concerning the responsibilities and authorities of the RADC/SADC ~~with respect to the JFACC, ACA, AADC, DAADC (if assigned) or other operational commanders~~.

4. Airspace Control Authority

a. ~~The JFC normally designates an ACA who has overall responsibility for establishing and operating the airspace control system.~~ The ACA develops policies and procedures for airspace control that are incorporated into an ACP and promulgated throughout the ~~area of responsibility (~~AOR~~)~~ or JOA. The ACP is implemented by the airspace control order (ACO) with which all ~~Service~~ components must comply. All ~~Service~~ component forces that affect joint air operations are subject to the ACO. However, centralized airspace direction does not include operational or tactical control over any DCA asset.

b. The ACA responsibilities with regard to DCA operations include, but are not limited to:

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

(2) Develop airspace control measures (ACMs) that support and enhance DCA operations.

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

5. Service Component Commanders

a. Component commanders are responsible for establishing decentralized controls and executing DCA IAW the ~~theater~~AOR/JOA-wide AADP. Within their area of operations (AO), land, naval, and amphibious force commanders are responsible for synchronizing the priority, timing and effects of CA fires with surface maneuver. This is best accomplished through the DAADC (when designated) or the senior DCA commander for the Service component forces. In addition, component commanders will provide tactical warning to assigned forces.

b. **Army.** The Commander, AAMDC is the Service operational lead for DCA. The Commander, AAMDC deploys in support of the ARFOR, or if designated, the joint force land component commander to ensure the Army's theater air and missile defense operations are internally coordinated and properly integrated with joint and multinational forces.

c. **Navy.** IAW the ~~C~~composite ~~W~~warfare ~~C~~commander doctrine, air defense of maritime HVAs is the responsibility of the air defense commander (ADC) normally deployed on an Aegis cruiser. When directed, an ADC may function as the Navy component DAADC, a SADC, RADC or be the ~~joint force~~ AADC, particularly during early ~~forced~~ forcible entry operations.

d. **Marine Corps.** The Marine Corps employs its forces as a Marine air-ground task force (MAGTF). MAGTF antiair warfare (AAW) assets vary according to the size of the force, but AAW is normally the responsibility of the aviation combat element.

e. **Air Force.** ~~All Air Force centralized planning and monitoring is accomplished within the air operations center. Decentralized battle management of DCA is executed by subordinate control and reporting centers (CRC) which are also usually designated as a RADC/SADC. The CRC also monitors/directs implementation of airspace controls, weapon controls, identification functions and is the theater air ground system (TAGS) focal point for Air Force and Army TADIL operations.~~ All Air Force centralized control of air operations is accomplished by the aerospace operations center. Decentralized execution of DCA tasks is accomplished through the subordinate elements of the theater air control system (TACS). The control and reporting center (CRC) may be designated as a RADC/SADC and also monitors/directs implementation of airspace and weapons control procedures and ID.

f. In general, Service components should:

(1) ~~Recommend~~Provide input on the best use of Service DCA forces ~~to the JFACC/AADC~~.

(2) Accomplish assigned DCA missions and functions.

(3) Develop subordinate DCA plans and procedures as required.

(4) Conduct necessary exercises and training.

(5) Make available DCA capabilities over that required for component missions ~~available to the AADC~~ for JOA-wide support.

SECTION B. COMMAND AND CONTROL REQUIREMENTS AND RESOURCES

6. Requirements

a. Effective DCA operations require reliable C2 capabilities that integrate air-, surface-, and space-based assets. C2 systems must enable cooperation and integration between components. (The collection of interoperable systems that enables this integration between components is collectively referred to as the C4I Family of Systems.) DCA commanders exercise effective C2 through a comprehensive C4I system.

b. DCA C2 nodes should be interoperable and capable of rapidly sharing information, facilitating coordination between components, and ultimately portraying a joint force common operational picture.

c. Close coordination among component commanders and the JFC is necessary to effectively execute DCA operations and to ensure a synergistic unity of effort. Many DCA actions will require rapid reactions and timely coordination between components. Ultimately, DCA component operations must be synchronized and integrated ~~theater~~AOR/JOA-wide to achieve the required degree of force protection.

d. The DCA operation requires the timely collection, analysis, production, and dissemination of reliable and accurate intelligence. Intelligence should be tailored to support real time operations as well as deliberate planning.

7. Resources

Component organizations provide much of the DCA-related C2 functions to the joint force.

a. The focal point for tasking and exercising Air Force DCA control is the TACS. The ~~joint air~~ aerospace operations center (~~J~~AOC) is the senior element of the TACS. When the Air Force forces commander is designated the JFACC, the AOC becomes the joint air operations center (JAOC), the focal point for planning and execution monitoring of joint air operations. Subordinate elements of the TACS include AWACS, CRC, air support operations center, wing operations center, tactical air control party, airborne battlefield command and control center, and JSTARS. TACS monitors ongoing missions, links with other Air Force TACS elements and TACS elements of other components to provide near real time (NRT) indications, warning, and situation intelligence to designated users, and helps to formulate objectives, avenues of approach and attack and courses of action (COAs).

b. The ARFOR provides the AADC with air defense artillery (ADA) assets, which support DCA operations. Drawing from its own planners and analysts, as well as those of the Army Corps and from other components, the Commander, AAMDC provides the Army perspective for DCA planning and IPB. The Army Corps ~~fire support elements and the~~ organic air defense brigade play an integral role in planning and executing Army DCA operations. Through the BCD, the Corps' requirements and assets are made known to the JAOC.

c. ~~Navy Tactical Air Control System is the principal air control system afloat. The senior Navy air control agency is the tactical air control center (TACC) and the subordinate elements is are the E-2 Hawkeye and the Aegis cruiser. The Navy ADC is responsible for coordinating air and missile defense and airspace management within the assigned AO.~~ The Navy forces provides the AADC with SAM capability hosted onboard surface ships and both early warning and tactical aircraft. The Navy ADC is normally located on board an AEGIS cruiser and is responsible for coordinating air and missile defense and airspace management within the assigned AO. In normal operations, DCA execution is accomplished by subordinate elements, including the E-2 Hawkeye, AEGIS, and other ships with necessary personnel and C4ISR. During amphibious operations, a Marine tactical air command center (TACC) may be responsible for coordinating and deconflicting Marine Corps air assets and airspace. The ADC will often function as a RADC or SADC for maritime areas.

d. **Marines.** MAGTF air operations, including AAW operations, are also planned and directed from the Marine TACC. Air defense battle management is conducted at the tactical air operations center (TAOC), which has overall airspace control and airspace management responsibility, ~~and~~ conducts real time surveillance and exercises control and battle management over all AAW forces. The TAOC can support the functions of SADC/RADC, and when performing that function, the SADC will act as the planning and coordination interface between the TAOC and the Marine TACC and senior DCA agencies.

SECTION C. MULTINATIONAL CONSIDERATIONS

8. General

DCA operations within alliances, coalitions, or other international arrangements must consider those **areas peculiar to multinational operations**. **For example, force capabilities and disparities, information and equipment security levels, and procedural and organizational differences** may influence the ability to achieve combined unity of effort. Specific considerations that will affect the integration of DCA include language barriers (including differing use of common terms), compatibility of C4I systems, information security issues, shared codes, and ~~developing compatible tactics~~ dissimilar doctrine and tactics, techniques, and procedures (TTP).

9. Responsibilities

Some areas need~~ing~~ emphasis to ensure **unity of effort** with other national forces.

a. **Differences in doctrine, training, equipment, and organization** should be identified.

b. **The multinational force commander (MNFC) is responsible to both national and foreign leaders** and must be prepared to negotiate when planning and developing ROE, defended assets and assigning DCA responsibilities.

c. When assigning tasks to elements of the force, the AADC must maximize the effectiveness of the nations' contributions towards reaching the desired end state. ~~He~~ The AADC should also attempt assigning tasks in a manner that ensures that all nations can make meaningful contributions.

10. Organizational Considerations

a. Individual national forces are not uniformly capable of defending against adversary air and missile threats. They may require DCA assets from another theater or nation.

b. Aims and goals of the various nations may be affected by factors shown in Figure II-1.

c. Multinational operations are usually undertaken within a coalition (an ad hoc arrangement between two or more nations for common action) or alliance (the result of formal agreements, i.e., treaties).

d. Each nation normally establishes a national center or cell to ensure effective control of its forces. National intelligence systems should be integrated to ensure responsiveness to operational needs and **issues related to releasability of intelligence information and products** to multinational partners must be resolved early.

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

11. Operations

a. **The President retains command authority over US forces** but it is sometimes prudent or advantageous (for reasons such as maximizing military effectiveness and ensuring unity of effort) to places appropriate US forces under the ~~OPCON~~ control of a foreign commander to

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

achieve specified military objectives. DCA may be one of these.

~~• In general, a foreign commander's authority over US forces, which will change depending on the nature and goals of the mission, must be clearly defined; however, within the limits of this authority (however defined), a foreign commander cannot change the mission or deploy US forces outside the AOR agreed to by the President. Also, a foreign commander cannot separate units, redistribute organic supplies (except IAW multinational agreements), administer discipline, promote US personnel, or change US forces internal structures unless agreed to by the National Command Authorities (NCA).~~

~~• These above considerations apply to foreign forces placed under the OPCON of US MNFCs. Nations do not relinquish their national interests by participating in multinational operations.~~

~~• For matters perceived as illegal under US or international law, or outside the mandate of the mission to which the United States has agreed, US commanders will first attempt resolution with the appropriate foreign commanders. If issues remain unresolved, the US commanders will refer the matters to higher US authorities.~~

b. The MNFC will ensure memorandums of agreement and/or status-of-forces agreements articulate collateral support requirements (e.g., security and logistics) for DCA forces assigned to protect allied and coalition forces.

c. Consideration should be given to assisting HN or allied civil authorities in establishing passive air defense measures for the civilian population and HN assets consistent with the overall mission. Civil Military Operations Centers are often used by MNFCs to achieve significant influence over HN activities through a process of communication, consensus, cooperation, and coordination.

Refer to Joint Publication (JP) 3-16, Joint Doctrine for Multinational Operations*, for more details on organizing alliance and coalition command structures and ~~H~~headquarters.*

> *"Let him who desires peace, prepare for war."*
>
> **Vegetius, 4th century Roman strategist**

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CHAPTER III
PLANNING DEFENSIVE COUNTERAIR OPERATIONS

~~*"Successful strategic thought is highly pragmatic. . . ."*~~

~~**RADM Michael G. Mullen**~~

"Know the enemy and know yourself, in a hundred battles you will be successful."

Sun Tzu

1. Introduction

a. **JFC Planning Responsibilities.** The JFC develops his campaign focused on the adversary centers of gravity (COGs) and ensures that friendly COGs are protected.

b. **AADC Planning Responsibilities.** The AADC uses assigned campaign plan tasks to develop the AADP. The amount of direct involvement depends on the time available, personal preferences, and the experience and accessibility of the staff. The AADC uses the entire staff and component DCA staffs during planning to explore the full range of probable and likely adversary and friendly COAs, and to analyze and compare friendly capabilities with the adversary's.

c. **Planning Considerations.** Planning DCA operations involves integrating friendly force capabilities and limitations against adversary vulnerabilities to achieve optimum results in an ever-changing tactical environment. The factors that must be taken into consideration for planning are outlined below:

(1) **Objectives.** The JFC develops a theater campaign plan and the AADC develops the AADP to protect those assets and forces the JFC requires to achieve the objectives.

(2) **Force Requirements.** The AADC must determine the type and number of forces needed to sustain the effort until the objectives are accomplished.

(3) **Logistics.** A comprehensive logistic capability analysis is integral to determine force requirements. Planners must be aware of any agreements or combatant commander directives that significantly alter responsibilities for logistic support.

(4) **Synchronization/Timing.** Synchronization, integration, deconfliction, allocation of capabilities/forces, and matching appropriate weapons against adversary critical vulnerabilities are essential targeting functions for the AADC. The more mobile an adversary is, the greater the need for timely action. Piecemeal or untimely attacks may give the adversary the opportunity to accommodate or reconstitute.

(5) **Weapons Availability.** Targets may be vulnerable to attack, but impervious to certain weapons or electronic combat systems. Planners must have a detailed understanding of weapons and systems capabilities.

(6) **Force Availability.** Careful planning is required to maximize the arrival and quick integration of forces, DCA as well as information warfare.

(7) **Force Size.** Determining the size and composition of forces selected to attack specific targets is based on the probability of damage/disruption, range, threat, weather, weapon system reliability, and desired level of destruction.

(8) **Operational Assessment.** A comprehensive, continuous operational assessment is an essential part of planning. The AADC's staff evaluates the results of operations to help refine the scope of the ISR effort; assist in determination and ID of operation phase points; and needs to consider more than the classic force application indicators (such as battle damage assessment). Assessing the human element is also essential.

d. **DCA Estimate.** The DCA estimate evaluates how factors in each field of interest will influence the potential COAs, provides information regarding their supportability, recommends DCA priorities, and forms a basis for the AADP. See Appendix A, "Area Air Defense Plan Format," for the Estimate's format.

(1) The estimate provides the basis for planning future operations and fighting current operations.

(2) The AADC develops the DCA estimate in concert with the JFC's staff.

e. **Mission Analysis.** The mission statement is the AADC's expression of what DCA forces must accomplish and why. During mission analysis, the AADC translates specified and implied tasks into missions for their subordinates. Intent of the JFC, the current situation, resources available and the desired end state contribute to the mission statement. Clarity of the mission and understanding by subordinates is vital to success.

SECTION A. INTELLIGENCE PREPARATION OF THE BATTLESPACE

2. General

~~JIPB is the analytical process used by joint intelligence organizations. It produces intelligence assessments, estimates, and other intelligence products to support of the JFC's decisionmaking process and determines the adversary's probable intent and most likely COAs for countering the overall friendly joint mission.~~ JIPB is the analytical process used by joint intelligence organizations to produce intelligence assessments, estimates, and other intelligence products to support the commander's (JFC's) decisionmaking process. It is a continuous process which enables JFC's and their staffs to visualize the full spectrum of adversary capabilities and potential COAs across all dimensions of the battlespace.

3. Differences Between JIPB and IPB

a. JIPB and IPB products **generally** differ in terms of their relative purpose, focus, and level of detail. The purpose of JIPB is to support the JFC, whereas IPB is specifically designed to support the individual air, ground, maritime or space operations of the component commands. JIPB's focus is on providing predictive intelligence designed to help the JFC discern an adversary's probable intent and most likely COA. IPB concentrates on the capabilities and vulnerabilities of the adversary's individual force components of interest.

b. JIPB also seeks to analyze the effects of non-geographic dimensions of the battlespace (e.g., cyberspace, human thought, electromagnetic spectrum) on joint operations.

JP 2-01.3, Joint Intelligence Preparation of the Battlespace*, contains a detailed discussion of the JIPB process.*

4. IPB and Operations Planning

a. IPB assists the DCA planner in visualizing the battlespace, assessing adversary air and missile capabilities and will, identifying the adversary's probable attack locations, and discerning the adversary's probable intent. IPB is not simply enumeration of adversary air and missile systems, but must describe how the adversary air and missile forces operate.

b. At the operational level, DCA IPB fuses JIPB and component IPB processes and products. Component IPB focuses on the adversary's forces and operations necessary to accomplish the most likely and most dangerous COAs identified by JIPB. 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 OCA/DCA integration and procedures must be developed to rapidly share data between OCA and DCA forces.

c. ~~**The Land Dimension.** Analysis of surface's physical geography concentrates on manmade and natural terrain features (e.g., transportation systems, built up areas and large bodies of water and mountain ranges). The basic approach in analyzing the land dimension is to consider observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach **While not generally critical to DCA air operations, surface characteristics may affect an adversary's COA when employing air and missile forces and supporting infrastructure.**~~ The land dimension requires an analysis of surface physical geography that concentrates on manmade and natural terrain features (e.g., transportation systems, built up areas and large bodies of water and mountain ranges). The basic approach in analyzing the land dimension is to consider observation and fields of fire, cover and concealment, obstacles, key terrain, and avenues of approach. While not generally critical to DCA air operations, surface characteristics may affect an adversary's COA when employing air and missile forces and supporting infrastructure.

d. ~~**The Maritime Dimension.** The maritime dimension encompasses the sea and littoral areas which have the potential to influence naval operations. Long-range shore-based weapons systems can be employed from a considerable distance inland. When combined with other~~

~~maritime area denial weapons such as mines, submarines, or new SAMs capable of engaging aviation (including stealth) at long range, they may impact the ability or rapidity at which naval forces can gain and sustain access and deny friendly forces the use of fixed facilities like ports and airfields. The geography of the coastal areas should be examined to determine potential areas for the deployment of maritime surveillance and targeting systems as well as weapons. Littoral areas may contain vulnerable geographic areas such as straits or land choke points that restrict tactical maneuver or affect weapon and sensor effectiveness. Other key aspects can include coastal road networks, islands, or highpoints with visual access to maritime operating areas, natural harbors and anchorages; ports, airfields, naval bases; and sea lines of communications.~~ The maritime dimension encompasses the oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals. Littoral avenues of approach may impact the ability or rapidity with which naval forces can gain and sustain access or entirely deny friendly forces the use of fixed facilities like ports and airfields. The geography of the coastal areas should be examined to determine potential areas for the deployment of maritime surveillance and targeting systems as well as weapons. Littoral areas also may contain vulnerable geographic areas such as straits or land points that restrict sea maneuver or affect naval weapon and sensor effectiveness. Other key aspects can include coastal road networks, islands, or highpoints that dominate maritime operating areas, natural harbors and anchorages; ports, airfields, naval bases; tides and sea lines of communications.

e. **~~The Air Dimension.~~** ~~Air weapons have the unique characteristic of being able to approach from almost any azimuth and a variety of altitudes with great rapidity, little warning, and from potentially great distances into the heart of an adversary's territory. However, the air dimension is influenced by surface characteristics. Terrain masking, weather and other conditions of the land and maritime environments should be considered when analyzing the air dimension of the battlespace, as well as the time of flight constraints on airfields, missile sites, aircraft carriers, cruise missile submarines, and hardened launch silos.~~ The air dimension has the unique characteristic of permitting approach from almost any azimuth and altitude, with great rapidity, little warning, and from potentially great distances into the heart of an adversary's territory. It is influenced by surface characteristics such as terrain masking, weather, and time of flight constraints.

f. **~~The Space Dimension.~~** ~~Space capabilities afford a wide array of options that can be used and leveraged. Manmade and natural terrain may not be as much an impediment to space forces, however, weather and other space environmental conditions (e.g., space debris and radiation hazards) may impede their effectiveness. In addition, given an asset's specific orbit, certain capabilities, for example, monitoring, tracking, may only be interrupted during certain periods. Analysts must be aware of space-based capabilities, their advantages and limitations and how they may contribute to the IPB planning. DCA planners must not omit adversary space assets from their joint targeting recommendations to their OCA counterparts.~~ The space dimension offers unique capabilities, such as access to deep or denied areas, as well as minimizing the impact of terrain masking. It is also non-provocative and often the first asset available for information. Some space assets are limited by terrestrial weather, as well as being subject to space environmental hazards such as radiation and intermittent solar storms. Constellation size and orbit also can limit the ability for continuous coverage. Analysts must be

aware of space-based capabilities, their advantages and limitations, and how they may contribute to the IPB planning.

5. The IPB Process

a. ~~Effective execution of DCA operations will require analysis of both potential launch areas and those areas of the battlespace occupied by friendly forces and critical defended assets designated by the JFC. Analysts should also consider threats that use non-physical dimensions to affect this space, for example, computer network attack, since these may originate outside the designated theater or JOA. However, the area of interest shouldn't be too large, in order to focus analytical and intelligence collection efforts.~~ All IPB follows a sequential four-step process.

(1) **Define the Battlespace Environment.** Succeeding steps will concentrate on this space since the dimensions will be larger than the physical boundaries of the JOA. Consideration should be given to:

(a) Critical areas likely to be targeted by adversary aircraft and TMs, including forces and build up areas.

(b) Forward operating locations, ~~[~~(launch, hide, and related sites, ammunition storage sites and associated command, control, communications, and computers ~~([~~[C4~~)~~])).

(c) Forward operating areas for anti-access or area denial capabilities such as IADS or coastal defense CMs that could be employed in support of adversary air and missile operations.

(d) Infrastructure. Garrisons, key manufacturing and transportation facilities, ~~host nation~~ HN governmental site.

(e) Key population centers.

(f) Operational and potentially operational aerial and sea ports of debarkation.

(g) Evaluate the range of adversary air capability and associated flight profiles.

(h) Airheads and beachheads.

(i) Threat ranges and flight profiles.

(2) **Describe the Battlespace.** The second step evaluates the effects of the environment on both adversary and friendly military operations to determine capabilities and broad COAs of both forces. Since the battlespace is not homogeneous, some areas may require greater analysis depending on the relative geographical complexity of the region. Planners should:

(a) Based upon range, pair adversary air threats with potential friendly targets. Determine missile trajectories and air avenues of approach for aircraft/UAVs/CMs.

(b) Identify areas for standoff attacks, submarine-launched ~~cruise missile~~ CM and carrier ~~wing attacks~~ operations.

(c) Determine ~~optimal times on target~~ periods of vulnerability based on weather, adversary attack cycles, light data, and friendly force deficiencies that cannot be concealed.

(d) Determine terrain effects on friendly defensive capabilities.

(e) Develop overlays and matrices that depict the military effects of geography and weather, demographics, and the electromagnetic and cyberspace environments.

(3) **Evaluate the Adversary.** Adversary capabilities are identified in terms of broad COAs and supporting operations that may influence the accomplishment of the defensive mission. Avoid evaluating adversary capabilities based on US joint doctrine.

(a) Assess adversary air threat inventory, ~~and~~ launch locations, capabilities, flight operations and targeting ~~tactics, techniques, and procedures (~~TTP~~)~~ to include raid or salvo size and interval.

(b) Consider demonstrated capabilities, levels of training and readiness status, and C4~~3~~ arrangements.

(c) Likelihood for use of WMD.

(d) Evaluate the threat not only to defended assets, but also to DCA systems and procedures.

(e) Examine the adversary's artillery, long-range air defenses, unconventional warfare forces and electronic warfare (EW) assets.

(f) Determine the adversary's requirements for and possession of air, missile and OCA support infrastructure.

(g) Assess the quantity and proximity of specific ordnance to their associated weapons or platforms.

(h) Assess threats that use non-physical dimensions (e.g., computer network attack).

(4) **Determine adversary ~~potential~~ most likely and most dangerous COAs.** To help the DCA commander attain battlespace knowledge, DCA planners must postulate the adversary's probable intent and future strategy. Considerations include:

(a) Determine likely timing of air and missile strikes, or airborne operations, both from land and maritime forces.

(b) Match targets and objectives with air corridors and avenues of approach.

~~●● Determine potential man-portable air defense system or other airfield attack threats in rear areas.~~

(c) Determine probable indications and warning criteria.

(d) Estimate adversary flight profiles, (weapons spacing, delay between salvos) and expected DCA effects on probable adversary COA (branches and sequels.)

b. During the cyclic IPB process, analysts must continuously evaluate specific threat weapon capabilities and observed changes in the adversary's operational profile or operations tempo. Every echelon is responsible for conducting IPB analysis.

c. The end product of the IPB process is battlespace knowledge that directly influences friendly COAs, designation of defended assets, ROE and ID criteria, and specific provisions outlined in the AADP and ACP. Information the DCA planner should expect to derive from this process would be:

(1) Adversary ~~A~~aircraft operating bases.

(2) Theater missiles and their operating locations; target sets, to include launch platforms and infrastructure: C2 nodes, missile stocks, forward operating locations/bases, trans-load sites, logistic sites and key transportation chokepoints.

(3) Signal operating instructions, vulnerabilities, redundancies, capabilities, locations, and order of battle of adversary IADS, communication links, and C4I systems and facilities.

(4) SAMs, antiaircraft artillery, and early warning/ground control intercept sites and facilities.

(5) Signals intelligence and EW assets.

(6) Climate and terrain within the JOA and their effects on friendly and adversary operations.

(7) Strengths and vulnerabilities of adversary offensive air and missile systems.

(8) Changes of the adversary's indirect and direct threat emitters, including wartime reserve modes and reprogramming of target sensing weapon systems.

(9) Location, status of all key nodes and targets that affect the adversary's ability to sustain air operations, and disposition of WMD storage facilities.

SECTION B. AIRSPACE CONTROL AND ENGAGEMENT ZONES

6. Planning

a. JP 3-52, *Doctrine for Joint Airspace Control in the Combat Zone,* is the ~~primary~~ governing publication ~~for the ACA. The ACA will promulgate unified operations and~~ on airspace requirements and processes and addresses use of the airspace via the ACP~~, which is implemented by ACOs~~. The primary DCA concerns with airspace control are to ensure that defensive operations are integrated with the overall ACP and that the ACP facilitates DCA and OCA synchronization.

b. Basic considerations for planning airspace control are shown in Figure III-1.

(1) **Support the Joint Force.** Airspace control ~~facilitates~~ is an integral piece of the joint air operations plan; ~~and operations~~ priorities stem from the JFC's priorities.

(2) **Interoperability.** Interoperability is essential to effective operations that can conserve DCA forces and munitions and to prevent fratricide.

(3) **Mass and Timing.** DCA planning needs to include consideration of the aircraft traffic volume and timing to fully integrate DCA with OCA and other missions.

(4) **Unity of Effort.** Liaison between joint force DCA elements integrates information flow and provides expertise to the designated combat zone airspace control authorities.

(5) **Integrated Planning Cycles.** The airspace control planning cycle must be integrated with the AADP, the air tasking order (ATO), and also support joint campaign and operation plans timing.

(6) **Degraded Operations.** The ACP must anticipate the results of attacks and use of adversary EW efforts and communications degradation on system operations. Effective plans span the spectrum from little to full degradation and consider the effects of adverse weather and

Figure III-1. Principles for Planning Airspace Control in the Combat Zone

night operations.

7. Weapon Engagement Zones

a. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines a weapon engagement zone (WEZ): "In air defense, airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with a particular weapon system." WEZs must be created ~~for~~ to enable each weapon system in the joint force. Types of WEZs include:

(1) Missile Engagement Zone (MEZ)

(a) High-altitude missile engagement zone (HIMEZ) — that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with high-altitude ~~surface-to-air missiles~~ SAMs.

(b) Low-altitude missile engagement zone ~~[~~(LOMEZ~~]~~) — that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with low-to-medium-altitude ~~surface-to-air missiles~~ SAMs.

(c) Short-range~~d~~ air defense engagement zone (SHORADEZ) — that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with short-range air defense weapons. **It may be established within a ~~low- or high-altitude missile engagement zone~~ LOMEZ OR HIMEZ**.

(2) Fighter engagement zone (FEZ) — that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with fighter aircraft.

(3) Joint engagement zone (JEZ) — that airspace of defined dimensions within which multiple air defense systems ~~(surface-to-air missiles~~ SAMs and aircraft) are simultaneously employed to engage air threats. When the JFC has a high level of confidence in the common tactical picture, a JEZ may be appropriate.

b. Proper sequencing in the establishment of engagement zones is crucial to an effective IADS and DCA operation. MEZs established for surface force defense are based on specific boundaries and weapon system capabilities. Fighters and ground-based echelons above Corps (EAC) SAM units and Navy SAM capable ships (which provide theater level support) are normally given larger WEZ to perform an area defense mission and to accommodate their longer-ranged weapon system capabilities. Generally WEZ are established in this order:

(1) WEZ for surface force defense are established as necessary.

(2) Establish HIMEZ to protect DAL assets IAW the AADP.

(3) ~~Establish the FEZ to support combat air patrol (CAP) operations after the surface MEZ are established. If combat losses result in SAM force MEZ gaps, consider covering with a~~

~~CAP if defense is still required.~~Establish FEZs that provide complementary coverage to the MEZs to support combat air patrol (CAP) operations. Placement of Cap should provide coverage beyond the range of the MEZ to achieve defense in depth. The FEZ normally extends above the coordinating altitude to the upper limit of either the assigned DCA or primary threat aircrafts' operating envelope. Where a MEZ and FEZ overlap horizontally, they may be separated vertically.

See JP 3-52, Doctrine for Joint Airspace Control in the Combat Zone.

(4) In consultation with the Service components, establish SHORADEZ or other special engagement zones for special operations or Service concerns.

c. ~~A JEZ is airspace of a defined dimension within which multiple air defense systems (surface-to-air missiles and aircraft) are simultaneously employed to engage air threats. A JEZ takes advantage of the complementing strengths of SAM forces and fighters.~~ When the JFC has a high level of confidence in the common tactical picture, a JEZ may be appropriate. Whenever possible, the AADC should implement JEZ operations in order to maximize active air defense weapon system(s) efficiency and effectiveness, provide defense in depth, and enable non line of sight engagements. A zone of this nature should be employed when one or more of the following factors exist:

(1) The adversary's employment of low altitude ~~cruise missiles~~ CMs dictates the need to ensure the ability to engage with all available forces through the zone.

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

(3) The operational characteristics of friendly aircraft and surface-based missile system and the nature of the operation do not lend themselves to MEZ/FEZ operations.

(4) The AADC and subordinate commanders are confident that reliable and effective situation awareness exists and CID procedures are in place to reduce or eliminate fratricide.

d. A surface-to-air MEZ should generally follow the following criteria:

(1) MEZ boundaries.

(a) Organic SAM units should have MEZ that cover their parent unit's AO.

(b) Direct support units' MEZ should fully encompass all nearby defended assets.

(2) Be large enough to allow early engagement of threat platforms before they reach firing range. ASM launchers should be killed before they can launch standoff munitions, UAVs before they reach on board detector range of friendly targets, and ~~cruise missiles~~ CMs must have multiple engagement opportunities for an effective defense.

(3) Specify what targets can be engaged within and which weapons can be used.

e. **Maritime Considerations.** Maritime battle groups are not static; they usually are a "moving MEZ" with separate AO~~s~~s for air operations. In a littoral environment, an amphibious operations area may encompass a portion of the land AO and function as a MEZ. In this case, AEGIS combatants may be restricted by geography when defending selected coastal assets. Linking Patriot and other land-based SAM systems with Navy generated search and fire control data can result in improved ability to defend littoral areas of the theater.

8. ACP Criteria

Since every operational area has unique aspects dictated by the threat, terrain, national objectives, and foreign national issues, every ACP will also vary. While the ACP will address all air operations and all missions, ~~component commanders~~ JFCs must ensure the following issues are addressed as a minimum:

a. Description and procedures for establishment and activation of an engagement zone.

b. ~~Describe battle management/C4I capability of the joint force, r~~Responsibilities and ~~duties of the~~ coverage areas for ~~SADC, RADC, ACA,~~ RADC/SADC, component air and missile defense forces, and C2 nodes.

c. ~~Describe relationships between the ACA, AADC, and supporting elements.~~Identify coordinating authorities for controlled airspace.

d. Describe interface procedures between different air control agencies or systems, including theater air-ground system, host-nation or component air traffic control (ATC), the international civil aviation organization, and other national tactical systems.

e. Develop positive and procedural ACM and CID procedures.

f. Outline and explain links between ACP and AADP.

9. Other Considerations

a. Operations along the edges of WEZs, sectors or other defined areas of airspace can present commanders with extensive coordination challenges. Adversary aircraft may cross into adjacent sectors during engagement, may fly 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 flight operations between sectors and regions that grant permissions to enter and depart airspace and to coordinate combat zone control activities with regular flight-area ATC services.

(2) Designate buffer zones in which one DCA sector can authorize engagement in an adjacent area.

(3) Establish friendly air corridors outside the ranges of friendly visual ~~identification~~ ID SAM forces when possible to reduce the risk of fratricide. Visually aimed surface weapons often have no capability to readily identify airspace boundaries or control measures in their portion of the battlespace. The ACA and AADC must collectively plan to address the issue.

(4) If combat losses result in SAM force MEZ gaps, consider covering with a CAP if defense is still required.

Modern warfare is three dimensional. In joint operations, the airspace of a theater is as important a dimension as the terrain. Airspace is used for various purposes, including reconnaissance and surveillance, maneuver, delivery of fires, transportation, and C2. Effective control and use of airspace directly influence the outcome of campaigns, major operations, engagements, and battles. Commanders must consider airspace and its use in all of their operational planning. Commanders must also anticipate the enemy will contest use of the airspace and must protect their forces from enemy observation and attack. In addition to providing force protection, air defense operations contribute to gaining and maintaining control of the air environment, and they help win the information war.

Standard Text 100-3, US Army Command and General Staff College

b. Operations during forcible entry or in undeveloped theaters may be initially small in scale or lack complexity. C2 under these circumstances should be simplified to facilitate the joint forces ability to respond to a given threat. The ~~original~~ ACP must be continuously assessed ~~with~~ through feedback from ~~DCA~~ commanders to ensure it ~~is~~ adequately ~~supporting~~ supports~~the AADP~~ DCA requirements. ~~The ACA and AADC must be prepared to improve or modify t~~The initial architectures may need to be modified based on the situation and/or additional assets arriving into the operational area. ~~**The JFC/AADC must** evaluate the adversary threat being faced in the theater/JOA and **ensure that the proper resources are on hand and/or allocated to meet the threat.** Units supporting the AADP should be sequenced in the force deployment schedules so that a capability can be established in consonance with the overall JFC priorities and risk assessment.~~

SECTION C. RULES OF ENGAGEMENT

10. General

ROE are directives issued by a competent military authority which delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Baseline ROE are found in CJCSI 3121.01A, *Standing Rules of Engagement for US Force*s. **For DCA to be effective, ROE must be established, disseminated, and understood.** US forces serving under foreign control must have the ability to respond IAW the CJCS SROE as a minimum.

a. SROE, approved by the ~~NCA (~~President and Secretary of Defense~~)~~ are the fundamental default ROE for US forces during military attacks against the United States and all military operations, contingencies, terrorist attacks, or prolonged conflicts, ~~outside the territorial jurisdiction of the United States~~ or during peace operations and remain in effect until rescinded. ~~The SROE may be augmented by supplemental ROE.~~ The SROE is the approved baseline ROE and is applicable unless supplemented/amended by approved theater specific ROE or supplemental ROE submitted by JFC and approved by the President or Secretary of Defense. They are applicable at all times unless superseded, in whole or in part, by supplemental ROE promulgated by the JFC. The purpose of the SROE is to implement and enable the inherent right of self-defense and provide guidance for the application of force for mission accomplishment.

b. Combatant commanders may augment the SROE. The JFC and commanders at every echelon are responsible for establishing and implementing the ROE for mission accomplishment that comply with ROE of senior commanders and the SROE. The JFC should request inputs and recommendations from the AADC, ACA and component commanders. For DCA to be effective, ROE must be established, disseminated and understood. The components and supporting commanders are responsible for ensuring compliance.

c. In multinational operations, nations may have specific ROE that cannot be changed or overruled by alliance or coalition chains of command. These national procedures must be identified, published and understood by all other nations and command echelons within the MNF. During MOOTW, publicly disseminating portions of the ROE may serve to preclude hostile actions by an adversary, if the ROE state that a local commander can take offensive action against a threat of hostile action.

11. Criteria

a. **Obligation and Responsibility for Defense.** ~~For individual US, units there is an inherent individual and unit right for self-defense that is never denied or limited.~~ Every commander has the inherent authority and obligation to use all necessary means available and to take all appropriate actions in self-defense of the commander's unit and other US forces in the vicinity. The commanders of all US forces must ensure that the ROE as established do not place constraints on a unit's ability to defend itself. Two elements that ensure adequate flexibility in ROE are **hostility criteria** and **scale of force**.

b. Hostility criteria provide DCA forces with guidelines to judge whether a potential attacker exhibits hostile intent, clarifying whether an engagement is appropriate and/or is authorized. Prior to hostilities, scale of force may tailor the response, based on the size and duration of the threat, and consistent with the type of threat. Graduated escalation of force is usually appropriate in ambiguous situations before resorting to deadly force. **A graduated set of criteria is intended to provide a selection of responses from which to choose;** it is not a checklist to take offensive actions. Commanders must ensure that subordinates do not feel constrained to progress sequentially through the graduated responses.

c. **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 **~~B~~border ~~C~~crossing ~~A~~authority (BCA)**. Prior to a declaration of war, adversary national borders are sovereign, and cannot be violated 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. BCA also applies to aerial reconnaissance. Space platforms are not restricted; the United States adheres to a policy of freedom of navigation in space.

See JP 3-14, Joint Doctrine for Space Operations*, for space information.*

d. **Synchronization with the ACP and AADP.** The ROE are an integral part of the AADP and the ACP. Planners and commanders must ensure that the AADP contains specific TTP 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 operated by an adversary until the international governing body closes a route and a notice to airmen is issued. Commanders must ensure the proper response is made when penetrations of the friendly airspace occur under the auspices of international air flight.

12. Planning

a. Centrally planned engagement procedures minimize duplication of effort and fratricide. The ROE are an integral part of the operations planning process and the J-3 is responsible for its integration. Permissive ROE allow use of beyond visual range weapons to engage hostile targets as early as possible. An example of permissive ROE would entail instructions directing the joint force to immediately engage any incoming ballistic missiles. Additionally, JFCs may elect to include CMs and ASMs for accelerated engagement as the situation warrants. The normal method of engagement against TBMs is decentralized.

b. **Staffing.** After commanders and staffs have input their recommendations, the draft ROE must be coordinated with the Staff Judge Advocate for compliance with US and international law~~and Public Affairs offices~~. Commanders and planners must also maintain close coordination with ~~these two offices~~ the public affairs office (PAO) to ensure that the ROE are disseminated and understood by all forces and the PAO is aware of any IO considerations.

c. Local foreign commanders may lack the authority to speak on behalf of their nation in the ROE development process. Complete consensus or standardization of ROE should be sought, but obtaining concurrence for ROE from other national authorities is a time consuming process. Multinational ROE should be kept simple so that national policies can be more readily adapted.

d. US forces participating in MNF operations will follow the ROE established by the MNFC~~ unless otherwise directed by the NCA~~ if authorized by the Secretary of Defense. ~~Generally, US forces will operate under a MNFC's ROE only if the combatant commander or higher authority determine that the MNFC's ROE are consistent with US policy guidance on~~

~~self-defense as contained in the SROE~~US forces will be under the control of a MNF only if the Secretary of Defense determines that the ROE for that MNF are consistent with the policy guidance on unit self-defense and with the rules of individual self-defense contained in CJCSI 3121.01A, *Standing Rules of Engagement for US Forces*. If the MNFC has not issued ROE, US forces will operate under the US SROE.

SECTION D. IDENTIFICATION

13. General

a. ID authority is the authority to assign the identity of an unknown contact as friendly, hostile or neutral, if possible. This authority is inherent in C2, and can be delegated to subordinate commanders.

b. ~~Identification~~ ID is an essential and inseparable part of airspace control and air defense operations. Accurate and timely ID enhances engagement of adversary aircraft, conserves friendly resources, and reduces the risk of fratricide. CID is the accomplishment of the ID process with ~~near-real-time~~ NRT exchange of information between all air control facilities, control units, and airspace users to meet the time and accuracy demands of combat operations. CID requires reliable voice and data nets, radars, ~~identification~~ ID friend or foe systems and selective ID features and established processes and procedures. To that end, ~~plans promulgated by the JFACC, AADC, ACA and JFC must be coordinated to ensure no conflicts arise~~ CID criteria contained in all plans must be coordinated to ensure no conflicts arise during DCA operations. Since ballistic missiles have a distinct flight profile, procedures for this threat should allow for immediate engagement.

14. Types of ID

a. Positive ID measures are high-confidence ID measures derived from visual observation, and/or electronic ID systems. In the case of TBMs, ID can be determined from an analysis of the trajectory as determined by space and surface-based assets. Positive ID is preferred because it results from ~~technical~~ actions ~~which~~ that provide the most rapid, reliable, and transferable means of ~~identification~~ ID.

b. Procedural ID measures are another ~~identification~~ ID method that relies on a combination of previously agreed upon ACM. It separates airspace users by geography, altitude, heading time and/or maneuver. Procedural ID can be advantageous for some missions and scenarios. ~~A form of procedural ID is passive ID, which is used by the US Army Patriot missile system. Theater criteria used in passive ID must also be reviewed, since some data items, such as radar observation of point of origin, may be subject to error.~~The AADP normally includes a matrix that can be used to establish a procedural ID. By following the criteria in the matrix, an assessment of the identity for the unknown object can be made. Based upon ROE and weapons control status (WCS) if not determined to be friendly that object may or may not be able to be engaged.

~~c. Formation~~**EXAMPLE OF PROCEDURAL IDENTIFICATION**

Formation tracking is the use of a single datalink 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 theater-specified (though variable) spatial relationship with each other (e.g., horizontal range, altitude separation, speed and course differentials). Air surveillance systems selectively employ formation tracking when displaying air tracks. Formation tracks are displayed to the operators and transmitted to other air surveillance and air defense systems via joint tactical datalink. Formation tracking reduces operator workload, allows older command and control systems to handle larger surveillance responsibilities and reduces the number of transmitted tracks required to represent the entire air picture.

Formation assessment (FA) is a procedural identification (ID) method used to apply the ID (friend or hostile) of one air track represented on the joint datalink to other aerial vehicles exhibiting a theater-specified spatial relationship (horizontal range, altitude separation, speed and course) to the datalink track. The purpose of FA is to provide timely and accurate ID to engagement platforms (ground-based air defense, as well as airborne counterair assets) to support engagement of hostiles and fratricide prevention. The use of FA presumes that a formation track has been established and that a combat identification has been placed upon the formation track by competent ID authority. Also, FA must use the same spatial relationship criteria to apply the formation track's ID to the local (or non-datalink tracks) as the surveillance system used to create the formation track. Failure to employ the same theater-specified criteria for formation tracking and FA could result in the application of friend protection to hostile aircraft, or engagement of friendly aircraft by friendly weapons platforms.

~~d. CID is the accomplishment of the ID process with near real time exchange of information between all air control facilities, control units, and airspace users to meet the time and accuracy demands of combat operations. CID requires reliable voice and data nets, radars, identification friend or foe systems and selective ID features and established processes and procedures.~~

15. Multinational Considerations

Special considerations must be paid to establishing a workable CID system during multinational operations. Differing electronic systems, firing doctrine and training will present the AADC with a complex mix of units with dissimilar capabilities. A fully integrated CID system must be set up in advance and training conducted as soon and as much as possible to facilitate proper operations. Positive ID means should be stressed in this situation and every effort made to devise a system to enable a positive ID of each nations' aircraft once airborne.

~~SECTION E. HIGH VALUE ASSET PROTECTION~~

~~16. Purpose~~

HVA protection is the defense of national assets, which are so important that the loss of even one could seriously impact US warfighting capabilities. Furthermore, the political ramifications of destroying one of these assets could provide the adversary with a tremendous propaganda victory.

17. High Value Airborne Assets

HVAA include AWACS, RJ, JSTARS, tankers and Compass Call aircraft. Depending on the defensive situation, other special mission aircraft and ABCCC may be considered HVAA.

18. Planning HVAA Protection

a. Active HVAA protection is normally performed by fighter aircraft in a CAP in conjunction with a C2 platform but may also be provided by afloat surface-to-air missiles. Allocating adequate fighter defense assets and proper OCA operations against adversary threats are the primary defenses for HVAA.

b. Passive HVAA can be achieved by proper positioning of HVAA stations or orbits beyond adversary interceptor range or deep in friendly SAM envelopes.

19. Surface HVA

a. Maritime HVA are aircraft carriers, maritime pre-positioning ships, combat logistics force ships, and amphibious ships conducting amphibious assaults and landings. Other surface HVA will be designated by the JFC based upon their importance to his campaign plan, effect of their loss and capability of replacement. Maritime forces may be able to effectively operate out of the threat envelope. Their inherent mobility and ability to project power ashore from beyond the visual and radar horizon can provide a natural defense against shore based sensors and weapons while maintaining the offensive capability of naval forces.

b. The protection of units and ports of debarkation (PODs) from air and missile attack is normally the primary focus of organic and joint anti-air warfare/air defense assets supporting land forces. Joint early entry forces should deploy with sufficient capabilities to preserve their freedom of action and protect personnel and equipment from potential or likely air and missile threats. The protection of assets designated on the DAL can be accomplished by the combination of air-, land- or sea-based forces appropriate to the operational environment and threat. Joint forces should deploy with sufficient DCA capability to gain access and support freedom of maneuver within the battlespace. This can be accomplished through either Service organic capability or the integrated DCA efforts of the joint force. The competing requirements of HVA protection and the DAL must balance relative risk and mission priorities to ensure that the DCA operations are consistent with the intent and operational goals of the JFC. If there are lift or other constraints, the JFC must ultimately balance the risks and competing priorities and decide how robust the initial entry DCA force will be.

20. Planning the DAL

a. The DAL should be developed with input from all components of the joint force. The first step is for each component to submit their critical assets they believe require theater level asset protection. Critical operational area assets (Figure III-2) are placed on the combatant commander's CAL. Examples include PODs, main forces or strike bases, geopolitical centers whose attack would influence the political course of the conflict, and logistic formations, bases or chokepoints. Once consolidated, the list is prioritized based on JFC guidance and by assigned missions, then assessed using the factors of criticality, vulnerability, recuperability and threat. The prioritized list is used to place theater level defensive assets against HVA based upon JFC priorities by phase.

b. Each defended asset should be prioritized as requiring active air defense or will institute appropriate passive measures if that is all that is available or if that will suffice. After the initial active air defense allocation, commanders should consider clustering to conserve air and missile defense forces and reassess if passive measures alone have improved an asset's posture. Once the AADC staffs, along with component representatives, have completed the defense design, those assets receiving theater level asset protection make up the DAL. This list is reviewed constantly for changes required by the progress of the operation.

c. **Levels of Engagement Effectiveness.** There are five levels of operational engagement effectiveness. The JFC normally establishes the required level of engagement effectiveness for each defended asset based on mission, adversary, terrain, troops, time and civilians. After the level of engagement effectiveness is established, then the defense design and firing doctrine parameters are developed. The JFC specifies which critical assets on the DAL will receive no dedicated theater DCA (Level 0) through a very high level (Level 4) for HVA.

- **Level 0 (None)** — is defined as the commander's decision to accept maximum risk where active defense forces provide no tiers of TBM protection.

- **Level 1 (Low)** — is for commanders that wish to provide some level of protection throughout their defended areas. One tier of TBM protection will be used.

- **Level 2 (Medium)** — is the normal level of defense used to provide specific military assets some level of protection using a single tier of protection operating alone. While a single tier operating alone normally provides Level 2, it may use two tiers operating together in an integrated defense.

- **Level 3 (High)** — is defined as the appropriate level of defense for assets that require a more robust level of protection than Level 2. Level 3 normally uses two tiers but may use one tier operating alone. This may also include areas where coordination between upper and lower tiers is used to defend a common asset.

- Level 4 (Very High) — is defined as the maximum defense for high priority assets such as population centers, ports, airfields, and other assets. This level normally requires two tiers operating together in an integrated defense. This may include areas where coordination between upper and lower tiers is used to defend a common asset.

~~**SECTION F. AREA AIR DEFENSE PLAN**~~

~~**21. General**~~

~~With the support and input of Service component and/or functional component commanders, the AADC develops, integrates, and distributes a JFC-approved joint AADP. The plan should contain detailed weapons control and engagement procedures and be closely integrated with the ACP. Proper DCA **planning considers active and passive air and missile defenses linked to OCA by a joint C4I infrastructure**. The AADC is responsible for integrating the capabilities of different components to construct a C4I architecture that will enable real time battle management. Because of their time-sensitive nature, defensive operations require a streamlined decision and coordination process and robust, redundant C4I.~~

~~See Appendix A, "Area Air Defense Plan Format," this publication, for an AADP format.~~

~~**22. Planning Considerations**~~

~~**Executing DCA Operations depends upon effective and redundant command and control planning.** RADC/SADC should be designated as required and configured into an IADS architecture. The IADS must integrate Marine Corps and Air Force ground-based C2 nodes, airborne C2 platforms and the roles of surface force air defense fire direction centers. As a minimum, certain requirements should be promulgated.~~

~~a. Required data links between centers and forces~~

~~b. Designate primary and secondary control centers for all active air defense forces~~

~~c. Align control centers with operational forces whenever possible; (e.g., the Marine TAOC should control all airspace over Marine forces in the littoral area).~~

~~d. Establish subordination among control centers if required to integrate DCA operations~~

~~e. Appoint DAADC's if required to advise on matters regarding operations, capabilities and to ensure integration of assets within components into the AADP.~~

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

~~g. Delegate necessary authorities and establish conditions for automatic permissions, transfers of function or other means to ensure the continuous responsiveness of theater DCA.~~

SECTION E. ASSET PROTECTION PLANNING PRINCIPLES

16. General

The JFC and staff will normally develop a prioritized critical asset list (see Figure III-2). This list identifies what should be defended. Components will provide input and submit their prioritized critical assets requiring theater level protection that must support tasks/missions assigned by the JFC. Usually the number of assets requiring some level of defense will be greater than the resources available to defend them, therefore prioritizing all entries is essential. Due to the dynamic nature of joint operations, priorities will change over the course of the operation or campaign. Procedures should be established that permit timely updates to priorities. The completed list is forwarded to AADC who will allocate available active air and missile defense forces to defend the prioritized assets listed. The product of this effort is the DAL. The DAL is a list of those critical assets that receive theater level asset protection. Each defended asset on the DAL should be prioritized as requiring active air defense or appropriate passive measures if that is all that is available. After initial active defense allocation, commanders should consider clustering to conserve DCA 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.

17. Critical Asset List Development Principles

a. **All assets are prioritized based on the factors of criticality, vulnerability, recoverability and the threat.**

(1) **Criticality.** The degree to which an asset is essential to mission accomplishment. It is determined by assessing the impact that damage or destruction to the asset will have on the operation's success. Damage to an asset may **prevent, significantly delay**, or **have no impact on** success.

(2) **Vulnerability.** The degree an asset is susceptible to surveillance, attack or damage. The following factors should be considered when assessing vulnerability:

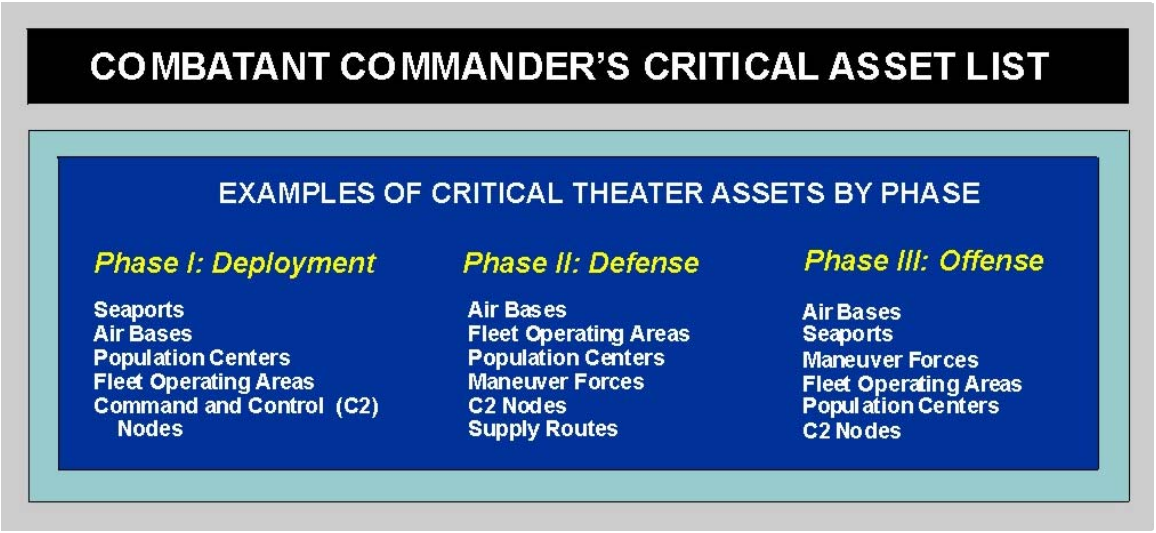

Figure III-2. Combatant Commander's Critical Asset List

(a) Survivability and cover (hardening).

(b) Camouflage and concealment.

(c) Mobility and dispersion.

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

(3) **Recoverability.** 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.

(4) **Threat.** Assess the probability an asset will be targeted for surveillance or attack by a credible/capable adversary. A thorough JPIB oriented specifically on adversary air and missile threats is key to an accurate threat assessment. Examples include targeting information provided by intelligence estimates, past adversary surveillance and attack methods, and threat doctrine.

b. **High Value Assets.** High value assets are classified as friendly **critical assets requiring protection**. They may be any asset (i.e., forces, facilities, etc.) the friendly commander requires for the successful completion of the mission. They are categorized as follows:

(1) **High Value Geopolitical Assets** are assets that are so important that the loss of even one could seriously impact the JFC's warfight. In addition, the political ramifications of destroying one of these assets could provide the adversary with a tremendous propaganda victory.

(2) **High Value Airborne Assets.**

(a) Include AWACS, RJ, JSTARS, and tankers and Compass Call aircraft. Depending on the defensive situation, other special mission aircraft may also be considered.

(b) Active protection is normally performed by fighter aircraft, but may also be provided by land- and/or sea-based SAM systems.

(c) Passive protection includes positioning high value airborne asset stations or orbits beyond adversary interceptor range or within friendly SAM envelopes.

(3) **High Value Surface Assets.**

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

(b) Active protection is normally provided by maritime Anti-Air Warfare capable systems.

(c) Passive protection is accomplished by operating out of the adversary's weapons envelope.

(d) Land assets include air and surface ports of debarkation, early entry forces, and operations centers.

(e) Active protection is normally provided by organic Air Defense Artillery systems.

(f) Passive protection is accomplished by cover and concealment, dispersal and operating out of the adversary's weapons envelopes.

18. Defended Asset List Development Considerations

a. **Levels of Protection.** A level of protection is an aggregated probability that 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 CVRT analysis.

(1) Level 1. Provides a near-perfect protection to assigned asset. Primary driver for resource positioning, planned methods of fire/integration of fires and initialization of DCA systems in order to obtain the highest feasible probability of protection against specific threats.

(2) Level 2. Provides the highest protection achievable while maintaining near-perfect protection for highest ranked assets.

(3) Level3. Provides the highest protection achievable while maintaining directed level for higher ranked assets.

b. **Levels of Engagement Effectiveness.** There are five levels of operational engagement effectiveness. The AADC normally establishes the required level for each defended asset on the DAL based on mission, enemy, terrain and weather, troops and support available – time available and the JFC directed levels of protection. After a level is established, the defense design and firing parameters are developed. Levels of engagement effectiveness 0-4 are employed using tiers or methods of coverage with some employing multiple tiers and a variety of active and passive measures. Tiers are commonly categorized as upper and lower.

(1) **Level 0 (None)** — defined as the commander's decision to accept maximum risk where active defense forces provide no tiers of protection.

(2) **Level 1 (Low)** — for commander's that wish to provide some level of protection throughout their defended areas. One tier of protection will be used.

(3) **Level 2 (Medium)** — the normal level of defense used to provide specific military assets using a single tier of protection. While a single tier operating alone normally provides Level 2, it may employ two integrated tiers of defense.

(4) **Level 3 (High)** — defined as the appropriate level of defense for assets that require a more robust level of protection than Level 2. Level 3 normally employs two tiers but may use one tier operating independently. This may also include areas where coordination between upper and lower tiers is used to defend a common asset.

(5) **Level 4 (Very High)** — defined as the maximum defense for high priority assets. This level normally requires two tiers operating together in an integrated defense. This may include areas where coordination between upper and lower tiers is used to defend a common asset.

SECTION F. AREA AIR DEFENSE PLANNING

19. General

With the support and input of Service and/or functional component commanders, the AADC develops joint AADP (see Appendix A, "Area Air Defense Plan Format"). **The AADP is the integration of active air defense design, passive defense measures and the C4I system to provide a comprehensive approach to defending against the threat.** The plan should contain detailed weapons control and engagement procedures, be closely integrated with the ACP and facilitate a streamlined decision and coordination process. Planners must understand that they will routinely be required to modify the AADP due to the dynamic nature of joint operations. Ideally, as the operation progresses and the AADP is refined, the adversary's ability to conduct air and missile attacks will diminish, reducing the threat to the JFC's freedom of action. The AADP builds upon the DCA Estimate (see Appendix B, "Defensive Counterair Estimate Format," for format) and should address command relationships, the adversary and friendly situation, the AADC's mission, the AADC's concept of operation, logistics, and C4 requirements.

20. Active Defense Design

Depending on the complexity of the threat, integrating and synchronizing all air and missile defenses will be a critical consideration in the active defense design. Defense against ballistic missiles, CMs, and aircraft each have unique requirements for active defenses. The DCA planner begins developing COAs by assigning active defense systems to each asset until the appropriate level of engagement effectiveness is achieved. Planners must anticipate that there will not be enough resources to defend all assets and developing multiple COAs with varying design schemes facilitates a staff's ability to recommend the best solution. Options may use a combination of weapon systems employing **area defenses** designed to protect multiple assets or **point defenses** using active defense capabilities to protect specific assets. In addition some elements may be chosen to employ organic DCA forces to defend themselves against direct attack. The following tasks should be considered when planning active defenses:

a. **Determine Surveillance Coverage Areas.** Defended airspace must be under continuous surveillance to facilitate early warning. The DCA planner should use a combination of air-, surface-, and space-based detection assets provided by the components to achieve this requirement. 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 is vital for a layered defense.**

b. **Develop the Active Defense Fire Plan.** The objective is to provide the required level of protection specified in the CAL. Defense resources involve applying six employment guidelines:

(1) Mutual Support. Weapons are positioned so that the fires of one weapons can engage targets within the dead zone of the adjacent weapons systems. For gun systems, this dead zone is usually small. For missile systems, the dead zone may be large and mutual support is a critical element. Mutual support can also cover non-operational units or units at lower states of readiness.

(2) Overlapping Fires. Weapons are positioned so that their engagement envelopes overlap. Because of the many altitudes from which the adversary 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 may be necessary when air defense is used in an area where the terrain does not canalize the adversary, 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 another 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. Sensors and weapons are positioned to deliver an increasing volume of fire as an adversary air or missile threat approached the protected asset. Defense in depth reduces the probability that "leakers" will reach the defended asset or force.

c. **Establish a MEZ.** Proper sequencing in the establishment of engagement zones is crucial to effective IADS and DCA operations. MEZs established for surface force defense are based on specific boundaries and weapons system capabilities. A surface-to-air MEZ should generally follow the following criteria:

(1) Ensure that organized SAM units' MEZs encompass the parent units' AO.

(2) Encompass all defended assets within the range of employed weapon systems within a direct support units' MEZ.

(3) Size the MEZ to support engaging threat platforms before they can engage friendly assets. ASM launchers should be destroyed before they can launch standoff munitions, UAVs before they reach on board detector range of friendly targets. Multiple engagement opportunities against threat CMs is essential for an effective defense.

(4) Specify the weapons that engage a given target.

(5) Establish SHORADEZs or other special engagement zones for special operations or Service component concerns. Consult with respective component liaison officers.

(6) Consider the fact that maritime battle groups are not "static" and they usually employ a "moving MEZ" with separate AO's for air operations. In a littoral environment, amphibious operations may encompass a portion of the land AO and function as a MEZ. In this case, maritime combatants may be restricted by geography when defending selected coastal assets. Linking land-based SAM systems with Navy generated search and fire control data can result in improved ability to defend the littoral areas of the theater.

d. **Determine Surface C2 Coverage and Fire Control.** DCA operations depend upon effective and redundant C2 planning. The IADS must integrate Marine Corps and Air Force ground-based C2 nodes, airborne C2 platforms and the roles of surface force air defense fire detection centers. As a minimum, the following is required:

(1) Designate RADC/SADCs as required and configure into the IADS architecture.

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

(3) Designate primary and secondary control centers for all active air defense forces.

(4) Align control centers with operational forces whenever possible; (e.g., the Marine Corps TAOC should control all airspace over Marine Corps forces in the littoral area).

(5) Establish primary and alternate control centers.

(6) Establish an intelligence and warning architecture; ensure remote units and separate forces are addressed.

(7) Delegate necessary authorities and establish conditions for automatic permissions, transfers of function or other means to ensure defenses remain responsive.

(8) Determine level of control. This describes the air defense echelon at which positive management of the air battle is being conducted. It can be the AADC, RADC, SADC, ADA brigade fire direction center (FDC), battalion FDC, or the individual fire unit. The element possessing positive management has engagement authority. This may be a different level for fixed-wing aircraft, rotary-wing aircraft, UAVs and theater missiles, and the levels of control may change over the course of an operation. Engagement authority is delegated to the lowest level in short-range air defense (SHORAD) fire units. High-to-medium altitude air defense (HIMAD) fire units normally have engagement authority for theater missile engagements. Engagement authority for aircraft is normally at SADC or higher.

(9) Determine modes of control. The two modes of control are either centralized or decentralized control. The mode of control selected will depend upon the capabilities of the C4I systems being employed, and both the friendly and adversary air situations. Centralized control is when a higher echelon authorizes target engagements to 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 HIMAD aircraft engagements. Decentralized control is the normal wartime mode of control for air and missile defense. 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. Normally, SHORAD engagements are decentralized.

(10) Specify trigger events, when they should be changed, and who has the authority to change them.

e. **Establish Combat Air Patrols Stations.** The normal method of deploying 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 protecting multiple assets.

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

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

(4) Consider Navy CAPs as not only defending carrier and amphibious groups but also as collateral defense of land-based assets positioning them over land during littoral operations.

(5) Consider employing a CAP if defense is still required and combat losses result in SAM force MEZ gaps.

f. **Establish a FEZ.** Establish a FEZ to support CAP operations after the surface MEZ are established:

(1) The FEZ normally extends above the coordinating altitude to the upper limit of either the assigned DCA or primary threat aircrafts' operating envelope.

(2) Where a MEZ and FEZ overlap horizontally, they may be separated vertically.

(3) Fighters are normally given a larger WEZ to perform an area defense mission and to accommodate their longer-ranged weapons system capabilities.

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 protection to airborne C2 systems.

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 agency. Fighters may conduct intercepts autonomously when authorized.

(2) When the availability of resources or the environmental depth of the resources precludes positive tactical control, C2 agencies may provide broadcast information of target data.

(3) US fighter aircraft usually operate with enhanced fire control radar and beyond visual range weapons that allow multiple targets to be engaged at once.

(4) Fighters are normally in communication with a C2 agency that vectors them toward airborne targets. The C2 agency also provides a link between the JAOC combat operations division and the airborne fighters. This communication link provides a flexible and reactive C2 arrangement.

(5) Airborne C2 agencies have the capability to retask fighters to meet protection requirements.

i. **Establish a JEZ.** A JEZ should be employed when one or more of the following factors exist:

(1) The adversary's employment of low altitude CMs dictates the need to ensure the ability to engage with all available forces throughout the zone.

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

(3) The operational characteristics of friendly aircraft and surface-based missile systems and the nature of the operation do not lend themselves to establishing a MEZ/FEZ.

(4) The AADC and subordinate commanders are confident that there is sufficient situational awareness and established CID procedures to reduce the possibility of fratricide.

21. Passive Defense Measures

Those assets not assigned adequate active defense assets must rely on passive defense measures for protection. By examining adversary munitions characteristics and quantities, and their targeting process, the likelihood and timing of an attack may be estimated. There are four principal considerations when planning passive air defense measures. These measures include:

a. **Tactical Warning Means and Procedures.** Rapid detection of attacks and timely warning to all affected units buys time to prepare and react. Tactical warning methods and procedures must be established, rehearsed, and thoroughly disseminated to all units. Information networks and other tactical assets must be dependable and overlap each other.

b. **Reduction of Adversary Targeting Effectiveness.** Adversary targeting effectiveness may be reduced by employing the following measures:

(1) **Command and Control Warfare (C2W).** C2W in support of DCA disrupts, destroys and degrades and adversary's ability to command and control offensive air and missile forces. Primary counterair responsibilities for C2W planning will usually be the responsibility of the OCA planner. However, close coordination between OCA and DCA efforts ensures the integration and synchronization of overall friendly efforts.

(2) **Mobility.** Friendly unit mobility limits exposure to adversary reconnaissance and attacks which reduces vulnerability and increases the survivability of systems. For DCA purposes, unit/asset mobility should reduce the adversary's ability to effectively target and attack friendly assets with aircraft and missiles.

(3) **Operations Security (OPSEC).** The reduction of electromagnetic, acoustic and light signatures and the use of patrols and local unit security are examples of measures to reduce an adversary's use of sensors to effectively target friendly units/assets. These measures also reduce the accuracy of adversary weapons, and the likelihood of attacks or raids on a given unit. Other examples of OPSEC include camouflage and concealment measures. Deception activities (decoys and alternate/supplementary positions) can influence or deny adversary decision makers accurate information on friendly defenses.

See JP 3-54, Joint Doctrine for Operations Security*, for specific guidance on OPSEC and JP 3-58,* Joint Doctrine for Military Deception, *for more information.*

c. **Reducing Vulnerability.** There are four means for reducing vulnerability:

(1) Hardening reduces the effect of attacks by increasing an assets ability to absorb damage and survive a direct attack. Careful positioning, field fortifications, and other methods exploiting cover can enhance protection of critical assets.

(2) Redundancy is the duplication of critical capabilities so that damage to one asset does not affect operations overall. Of primary concern are "soft" targets such as C2 nodes and sensors, and fixed sites such as airfields and ground stations for airborne sensors.

(3) Dispersal reduces target vulnerability by decreasing concentration and making a target more difficult to destroy. Combined with mobility and deception, dispersal increases adversary uncertainty as to whether a particular location is occupied and, if so, whether it will be occupied when the attack is executed.

(4) NBC defense consists of employing detection and NBC reconnaissance to avoid contamination and individual and collective protection and decontamination capabilities. Effective NBC defensive measure ensure a unit can survive and operate in an NBC environment.

See JP 3-11, Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environment.

d. **Recover and Reconstitution.** Following and 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 IAW JFC established priorities. NBC aspects of recovery and reconstitution will require special emphasis on decontamination and proper handling of NBC casualties.

SECTION G. ENABLING CAPABILITIES

22. Special Operations

~~Special operations have become an integral part of a theater campaign across the range of military operations and should be considered when planning DCA operations. To ensure proper identification and reduce the potential for fratricide, SOF liaisons must ensure proper procedures are in-place for cross-border airborne operations. SOF direct action missions (deep reconnaissance and post strike assessments) can provide information that aids in the timing of DCA activities. Integrated into offensive operations to destroy or disrupt air and missile bases, logistic or C2 sites, SOF can assist OCA forces, which in turn reduces adversary offensive capability against friendly DCA activities.~~ Special operations are an integral part of a theater campaign across the range of military operations and should be considered when planning DCA operations. Missions conducted by SOF, such as special reconnaissance, direct action, and unconventional warfare, can aid both DCA and OCA operations by providing information or by destroying or disrupting air and missile bases, logistic sites, and C2 facilities. To ensure proper ID and reduce the potential for fratricide, SOF liaisons must ensure proper procedures are in-place for cross-border airborne operations.

For more information refer to JP 3-05, Doctrine for Joint Special Operations.

23. Information Operations

DCA operations are most effective when they are conducted from a position of information superiority. Active and passive air defense operations can benefit from the defensive aspects of IO. Denying the adversary knowledge of friendly status, capabilities and locations is integral to effective DCA operations and is achieved via the full range of defensive measures, such as OPSEC, deception, and electronic security. Offensive IO should be employed to affect the adversary's decisionmaking process including choice of targets, ability to coordinate attacks or sequence of air and missile operations. IO offensive EW measures may be used in direct support of DCA operations to degrade and disrupt in-bound adversary airborne platforms; other means may be psychological operations, attack and destruction of C2 nodes, special IO and potentially computer network attack.

For more information refer to JP 3-13, Joint Doctrine for Information Operations.

24. Space Operations

Due to the theater-wide support capabilities they bring, space operations must be considered when planning DCA operations and establishing a battle management C4I architecture. The use of space capabilities has proven to be a force multiplier when integrated into joint operations. Space can provide ~~assured~~ theater-wide voice and data communications and global positioning and navigation assistance with CID. Satellites and their associated ground stations provide early warning of aircraft and missile launches impact point predictions, launch point determinations and related intelligence. All of this is integral to establishing an integrated air and missile defense system.

For more information, refer to JP 3-14, Joint Doctrine for Space Operations.

25. Intelligence Support

The intelligence function is carried out by a geographically dispersed network of national and Service organizations, staffs and systems. Properly interconnected they form a disciplined and responsive information gathering, processing and dissemination structure. The joint staff will have a joint intelligence center (JIC) or joint intelligence support element (JISE) and is often supported by a national intelligence support team (NIST). These supporting elements track the adversary to detect, and identify threats and then provide warning and cueing.

For more information, see JP 2-01, Joint Intelligence Support to Military Operations.

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CHAPTER IV
DEFENSIVE COUNTERAIR EXECUTION

"Being ready is not what matters. What matters is winning after you get there."

Lieutenant General Victor H. Krulak, USMC

SECTION A. ACTIVE AIR DEFENSE

1. General

Active air defense operations include the following:

a. Area defense; uses a combination of weapon systems to defend a broad area.

b. Point defense; protects limited areas, normally in defense of vital elements of forces or installations.

c. Self-defense; allows friendly units to defend themselves and friendly units/assets in the vicinity against direct attack or threats of attack by using organic weapons and systems. The right of self-defense is inherent in all ROE and weapons controls.

~~d. HVA protection defends national assets, which are so important that the loss of even one could seriously impact US warfighting capabilities.~~

2. Resources

a. The integration of active air defense systems provides efficient control and exchange of ~~real-time~~ information to all defensive forces and resources. Assets used in conducting active air defense may include fixed- and rotary-wing aircraft, surface-to-air weapons, and battle management C4I systems, netted into an IADS via a redundant and flexible C2 architecture constructed with interoperable data links, voice command circuits, and ~~a redundant and flexible C2 architecture~~ common displays. Since DCA is by nature reactive, the ~~initial momentum~~ first action belongs to the adversary and the IADS must be flexible enough to respond to the most challenging threats.

b. Surface forces ~~will generally~~ possess ~~a large portion of~~ the following ~~surface-to-air missile~~ SAM systems:

(1) Army Corps air defense brigades normally are configured with 2-4 missile battalions, either HIMAD or SHORAD. In addition, EAC brigades with HIMAD will normally be made available to the AADC for theater air defense, usually under C2 of the AAMDC.

(2) Varying in size with the size and type of the ~~amphibious~~ expeditionary force, Marine ~~air defense units~~ forces are equipped with extensive air defense command and control facilities including long range 3-dimensional radars and SHORAD weapons.

ROYAL AIR FORCE FIGHTER COMMAND, BATTLE OF BRITAIN 1940

Fighter Command was the apex of a command and control network which unified the different elements of fighter aircraft, radar and ground defences into a complex system of defence which gave it a formidable striking power and effective operational flexibility. Bentley Priory was the heart of this system and it received information on incoming hostile aircraft, relayed on secure landlines from the radar stations, to its Filter Room. Once the direction of the plots was established, the relevant Group Operations Room was alerted, where the Group commander would decide which of his sectors would intercept.

SOURCE: British Imperial War Museum Internet Exhibit

(3) ~~Carrier groups usually have 3 or more Aegis capable ships. Surface forces also possess automatic weapons (machine guns and light cannon) suitable for use in an anti-aircraft role, such as Phalanx, the Navy's point defense system.~~ Naval SAM capability is resident in a wide variety of ships. AEGIS cruisers and destroyers will provide area (HIMAD) and point (SHORAD) air and missile defense. All surface ships are provided with self-defense capability (guns and/or missiles). Normally area defense capable ships will deploy as part of an Carrier Battle Group (CVBG). Some of these multi-purpose ships will normally be made available in direct support to the AADC for theater air defense usually under the OPCON/TACON of the appropriate Navy commander.

c. **US Interceptor Aircraft.** The Air Force and Navy possess fixed-wing aircraft with a primary DCA mission. Other joint force fixed-wing fighter aircraft may also be used in an active defense role.

d. Other aircraft that are critical to DCA include the airborne early warning and control platforms, such as the E-3~~A AWACS,~~ Sentry and E-2 Hawkeye~~, EP-3 Aries II, and the ABCCC~~.

e. When operating with allied or coalition forces, proper coordination is essential to familiarize all active defense forces with member nations' aircraft. This is especially critical if non-US forces are using the ~~same~~ aircraft ~~as~~ similar to the adversary.

3. Execution

The overall DCA effort ~~should~~ must synchronize and integrate forces and capabilities from all components. DCA operations should attempt to intercept intruding adversary aircraft and missiles as early as possible. Although DCA operations are reactive in nature, they should be conducted as far from the friendly operational area as feasible. To ensure ~~attrition~~ defeat of adversary air and missile threats, the engagement process must continue through the approach to, entry into, and departure from the friendly operational area. The key to effective DCA is rapid implementation, proper execution, and timely adaptation of the AADP. The dynamic nature of war requires DCA ~~operators~~ commanders be prepared to modify the AADP as the situation requires; they should fight the adversary rather than the plan. This ~~process~~ flexibility is

accomplished through tactical C2 (commonly referred to as **battle management**), ~~the C2 function used to~~ monitoring operations and ~~execute~~ executing based on the JFACC's ~~the JFC's/AADC's~~ intent.

a. **Battle management** entails visualizing where, when, and with which forces to apply component DCA capabilities against specific threats. Successful battle management supports synchronization and integration of active and passive air defense efforts with other air operations ensuring unity of effort and reducing the expenditure of resources and the risks of fratricide. For subordinate commanders and controllers, effective battle management requires an ability to visualize the current situation, make rapid decisions, and match the appropriate capability to the threat. This requires managing available resources against the current and potential adversary action, directing the correct response in a timely manner and then controlling or monitoring the execution.

b. **Battle Management Organization.** Complex DCA operations require a robust and flexible command structure. Such a command structure is generally established by the designation of one or more RADCs responsible to the AADC for DCA operations within a specific geographic area. The command structure may be further refined by the assignment of one or more SADCs responsible to the RADC for DCA operations within an assigned sector (embedded within a region). These RADCs and SADCs have joint responsibility to oversee/direct the DCA assets of all components systems within their region or sector as appropriate.

c. All surface forces conduct air and missile engagements and other air operations ~~in accordance with~~ IAW the AADP/ACP. All surface-to-air capabilities and forces assigned, attached, and supporting the joint force are included in the AADP.

d. Fighter aircraft conducting DCA operations are normally under positive control of a C2 agency. Fighters may conduct intercepts autonomously when authorized. When available resources precludes ~~tactical~~ close control, C2 agencies may provide broadcast information of target data. US fighter aircraft usually operate with enhanced fire control radar and beyond visual range weapons that allow multiple targets to be engaged at once.

(1) Fighter aircraft normally perform CAPs or respond to airborne threats from ground alert locations during DCA operations. Fighters are normally in communication with a C2 agency which vectors them toward airborne targets. The C2 agency also provides a link between the JAOC combat operations division and the airborne fighters. This communication link provides a flexible and reactive C2 arrangement. General types of CAPs are:

(a) Barrier CAPs for area defense;
(b) base defense or local asset defense; and

(c) escorts for HVAAs.

(d) Some CAPs may also have additional missions (e.g., using barrier CAPs to inspect or "sanitize" returning strike packages to ensure adversary aircraft do not shadow friendlies back to base).

(2) Airborne retasking. If required, C2 agencies have the capability to retask flights to meet DCA operational requirements.

(3) Navy CAPs defending carrier battle and amphibious groups may be positioned over land during littoral operations, and can provide collateral defense of the land AO.

e. WCS is a control measure designed to establish the degree of freedom for fighters, surface air defense, anti-aircraft, and small arms weapons to engage threats. (Missiles of any type, friend or foe, which threaten the unit may be engaged at all times.) US forces use three standard WCS, declared for a particular area and time. US forces will not disseminate these WCS orders via tactical data links.

(1) Weapons free — the least restrictive status. Under weapons free, any target not positively identified as friendly may be engaged.

(2) Weapons tight — the normal status. Under weapons tight, only targets positively identified as hostile may be engaged.

Note: Weapons Free/Weapons Tight Control Orders impose a status or condition applicable to weapons systems within a defined volume of airspace. Established US doctrine does not allow for further interpretation of weapons control orders against specific targets under any circumstance. The transmission of Weapons Free/Weapons Tight Control Orders against specific targets by US forces is prohibited. Any reception of Weapons Free/Weapons Tight Control Orders against specific targets should be immediately clarified via voice request to higher authority.---Message, JOINT STAFF WASHINGTON DC//J3// 081430ZJUL96

(3) Weapons hold — the most restrictive status. Units may fire only in self-defense or when ordered by proper higher authority.

f. Fire control orders are established to standardize tactical firing instructions issued during the conduct of an air battle. US fire control orders are:

(1) Engage — in air defense, a fire control order used to direct or authorize units and/or weapon systems to fire on a designated target.

(2) Cease engagement — directs units to stop the firing sequence against a designated target. In air defense, break the engagement on the target specified, however, missiles already in flight will be permitted to continue to intercept. (Multi-service TTP brevity codes).

(3) Cease Fire — (a) A command given to any unit or individual firing a weapon to stop engaging the target. (b) A ~~a~~ command given to air defense artillery units to refrain from

firing on, but to continue to track, an airborne object. Missiles already in flight will be permitted to continue to intercept.

(4) Hold fire —an emergency order used to stop firing. Missiles already in flight will be prevented from intercepting, if technically possible.

g. **Mobility.** When operations require ~~surface force~~ Army or Marine Corps firing units to change location, displacement times must be considered. These ~~S~~surface unit displacements may take hours or even days and extensive coordination may be required; convoy plans and permissions, realigned logistics, travel time, and shifting of backfill forces may be necessary. Navy surface forces, on the other hand, are capable of full operation while repositioning.

h. **Cross-boundary Operations.** Boundaries between forces and units are areas of risk. Distribution and control of fires should be addressed during planning however, units conducting DCA in the vicinity of boundaries should coordinate operations to minimize the risk of fratricide while providing a seamless defense. Generally, engagements that cross a unit boundary or are in a buffer zone will give priority of fires to the threatened unit.

i. The entire volume of defended airspace must be under continuous surveillance by a combination of air-, space- and surface-based detection assets. Adequate early warning of air and missile threats provides maximum reaction time for friendly forces to seek shelter or take appropriate action, thus **early warning of hostile air and missile attacks is vital for a layered defense.** ~~To maximize destruction of adversary air and missile threats, **the engagement process must continue throughout the threat's approach to, entry into, and departure from the friendly airspace.** DCA operations attempt interception of intruding adversary aircraft and missiles as early as possible. Although DCA operations are mostly reactive in nature, they should be conducted as far from the friendly operational area as feasible.~~

j. **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 engaged in crew rest and/or maintenance. "All clear" procedures should be established for when a threat no longer exists.

k. **Transitions in DCA Operations**

(1) Detection of adversary offensive preparations may be an indication of an impending hostile act and signal the transition from peace to combat operations. Detection of these preparations allows for the transmission of tactical warnings that alert commanders, automated weapon systems, sensors, fusion centers, C2 nodes, and in some cases, civil authorities to prepare for the expected attack.

(2) Active air and missile defenses can be established in consonance with the overall JFC priorities and risk assessment.

(3) Transitions of C2 functions such as Marine Corps TACC, RADC, ID authority, etc. from one controlling headquarters ~~and centers~~ to another must be accomplished smoothly, with succeeding headquarters or nodes not assuming ~~C3~~ C4 functions until ~~real time~~ the appropriate level capability is actually in place. Centers receiving a transfer of functions should be fully operational as an alternate or subordinate facility prior to transfer of authority.

l. **Decentralization and Tactical Engagement Control.** Active defenses are centrally planned and decentrally executed. However, decentralization is a relative condition. ~~If the AADC decentralizes fighter engagement authority to the SADC (i.e., a CRC), authority to engage with ADA may still be centralized at the RADC.~~ The AADC must specify the conditions and limits within which engagement authority is decentralized. A ~~subordinate~~ control node should retain engagement authority only if it can adequately perform battle management, based upon the threat level and the complexity of engagements.

> *"However beautiful the strategy, you should occasionally look at the results."*
>
> **Sir Winston Churchill**

SECTION B. PASSIVE AIR DEFENSE

4. Measures

Passive air defense is necessary to complete the essential individual and collective protection for friendly forces, population centers, and critical assets. By examining adversary munitions characteristics and quantities, and their targeting process, the likelihood and timing of an attack may be estimated and passive measures can be employed before, during, and after an attack. There are four principal measures for passive air defense (see Figure IV-1).

a. **Tactical Warning.** Tactical detection and warning triggers some passive actions and enhances air and missile defense ~~actions~~ capabilities by decreasing weapon system reaction times. Component commanders are responsible for providing tactical warning to assigned forces and are supported by national and theater systems. Combatant commanders are responsible for establishing a theater air and missile warning architecture to share warnings with joint force components and civilian agencies.

b. **Reduce Adversary Targeting Effectiveness.** The effectiveness of an air or missile attack, or airborne surveillance can be reduced through:

(1) **C2W.** Electronic warfare and selected attack operations and interdiction are targeted against the C4I assets that control adversary forces capable of striking into friendly airspace. This includes weather sensors and communication nodes as well as air and base control centers.

Figure IV-1 Principal Measures for Passive Defense

(2) **Mobility.** Mobility reduces vulnerability and contributes to survivability of certain systems by limiting exposure to reconnaissance and targeting. Frequent movement of units (inside the adversary's intelligence cycle) is of singular importance when the threat is severe.

(3) **Deception.** Deception misleads adversaries by manipulating, distorting, or falsifying friendly actions. Deception influences adversary decision makers by feeding their intelligence collectors what appears to be credible information or by denying the adversary the ability to gain tactical, operational, and strategic information when using reconnaissance and surveillance systems.

(4) **OPSEC.**

See JP 3-54, Joint Doctrine for Operations Security, *for specific guidance on OPSEC.*

(a) Emission control/communications security. Communications security, and an emission control program for infrared (IR), electromagnetic, and acoustic signature reduction deny adversary sensor and reconnaissance assets timely acquisition and ~~identification~~ ID of friendly targets.

(b) Force protection/counter-surveillance. Local unit security is an important element in denying accurate targeting data to adversary SOF or other adversary agents. Patrolling and ground forces support is important to keep adversary threat forces of Level I (agents, saboteurs and terrorists) and II (small tactical units) from conducting harassment or interdiction attacks against DCA assets.

(c) Nighttime support operations. Conducting time-consuming resupply or other operations that increase the vulnerability of units during the night. This may reduce the magnitude of the threat to the unit during these times.

(d) Camouflage and concealment. Signature reduction measures also include camouflage and concealment (including using the cover of complex terrain).

See JP 3- 58, Joint Doctrine for Military Deception.

c. **Reducing vulnerability** enables units to survive an adversary attack. Measures to reduce vulnerability include:

(1) **Hardening the Force.** Hardening reduces the effect of attack on systems and facilities (i.e., aircraft, air base support equipment and facilities, nuclear delivery systems, nuclear storage areas, C2 elements, communications nodes, and theater logistic facilities). Protection for mobile forces and equipment may be best accomplished by careful positioning, field fortifications, and other field-expedient methods.

(2) **Redundancy.** A principal means of preserving combat power is duplication of critical capabilities that are particularly vulnerable to ~~TM~~ attack and for which other passive measures may be less appropriate. Of primary concern are "soft" targets such as C2 nodes and sensors, and fixed sites such as airfields and ground stations for airborne sensors.

(3) **Dispersal.** Dispersal reduces target vulnerability by decreasing concentration and making a target less lucrative. Combined with mobility and deception, dispersal increases adversary uncertainty as to whether a particular location is occupied and, if so, whether it will be occupied when the attack is executed.

(4) **NBC Defense.** Units employ detection and NBC reconnaissance to avoid contamination, individual and collective protection for force protection to sustain operations, and decontamination to recover from NBC effects.

See JP 3-11, Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments.

(5) **Civilian Training.** Civil authorities should be ~~trained to organize and instruct their populations on actions to take upon warning of attack. This training will facilitate civilian protection efforts and may reduce the impacts of munitions striking civilian areas.~~instructed on receiving and understanding warning messages in order to organize their populations upon warning of attack.

d. **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~~ IAW JFC established priorities. NBC aspects of recovery and reconstitution will require special emphasis as improper handling of NBC casualties may hamper other activities.

5. Resources

a. The components of the joint force bring unique capabilities to the different aspects of passive air defense. Engineer, chemical defense and decontamination, explosive ordnance disposal and medical units may contribute significantly to passive air defense efforts and the joint force must maximize the total force's passive air defense capabilities. A threat based risk analysis, distributing area responsibilities and establishing support taskings ensures that critical assets have adequate passive air defenses.

b. **HN, Allied, and Coalition Assets.** Foreign forces and civilian infrastructure may augment or enhance joint force passive air defense efforts, either through government coordinated action or contracted support. It is essential that these capabilities, when available, are integrated into the total passive air defense response in the theater.

6. Execution

a. **Responsibilities.** The chain of command is responsible for timely warning of attack.

(1) As a minimum, the AADC must be able to pass warnings directly to the JFC's ~~component~~ Service and functional component command headquarters. TBM warnings generally will originate from the theater event system/joint tactical ground station (JTAGS) detachment. Airborne threat warnings are generally issued through the RADC/SADC. Local commanders may declare local Air Defense Warnings based on the local threat.

(2) Component commanders ~~are responsible to~~ must ensure ~~the establishing of~~ voice or data links ~~to the AADC~~ are established. Component commanders are further responsible to establish voice or data links to provide ~~T~~tactical warning ~~is retransmitted~~ within their components to the lowest 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 foreign forces who are unable to link up within their parent organization.

b. **Defense Clustering.** To facilitate the span of control for local commanders, support activities may be grouped into clusters. Grouping defended assets with active DCA units or locating critical force elements near declared assets is a passive measure that enables economy of forces, and localized defense in depth. It 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.

SECTION C. COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS AND INTELLIGENCE REQUIREMENTS

7. General

An interoperable C4I architecture is a critical element in OCA/DCA synchronization and integration. It must meld communications, sensors, automation and intelligence with commanders, operators and weapons throughout the battlespace, at appropriate decision and execution levels to integrate forces and missions. Through rapid, reliable, flexible, and secure exchange of information a C4I architecture provides the timely operational and intelligence information needed to plan, employ, coordinate, deconflict, execute, and sustain joint DCA operations. **These systems facilitate the integration of defensive ~~with~~ and offensive operations, and facilitate centralized planning and decentralized execution.~~,~~ ~~and to~~ To the extent of technical, intelligence and force operational limits**, the AADC ~~and ACA~~ should establish an IADS of common digital data links, control centers, sector and other-echelon operations centers.

8. Support Requirements

a. For every operational element involved in DCA, the C4I family of systems must support:

(1) ~~r~~Rapid communications and coordination links and procedures;

(2) data fusion and decisionmaking nodes;

(3) warning and cueing systems; and

(4) links to dedicated weapons systems, other nations combat and/or civilian authorities.

b. Inherent in effective ~~air and missile defense~~ DCA operations is an absolute requirement for vertical, horizontal, technical and procedural interoperability. Defensive C4I processes are built using existing joint and Service systems and capabilities. Passive air defense measures require WMD effects ~~identification~~ ID, launch detection, impact prediction and timely tactical warning. Active air defenses require early airborne objects detection and warning, and ~~near real time~~ NRT C2 to conduct air and missile defense engagements and battle management. The C4I system must also generate accurate adversary launch and impact points and the associated location data, with timely and effective distribution of this information to enable OCA.

c. Supporting intelligence elements should be tailored to support real time operations as well as deliberate planning. Functions of the supporting intelligence elements include:

(1) Collection management;

(2) Determining ~~T~~threat weapons and support systems locations;

(3) Combat assessment to include ~~bomb~~ battle damage assessment from OCA efforts against threat platforms that are the main DCA concern;

(4) Indications and warning/early warning/launch warning;

(5) Predicting ~~W~~weather effects on defensive operations and threat attack capabilities;

(6) Continuous reassessment of adversary action based upon previous and current activities.

d. Intelligence supporting defensive efforts requires interface with existing national and theater sensor and surveillance networks. The C4I system should accommodate a variety of Service component, national, and allied or coalition communications systems.

9. Resources

There are several resources available to the JFC for integrating DCA C4I.

a. Joint Interface Control Officer (JICO) and his cell oversee~~s~~ the technical integration of joint data and communications systems. The JICO is responsible for effective planning and management of the joint multi-~~TADIL~~tactical data link network within an ~~theater of operations~~ operational area, IAW CJCS Manual (CJCSM) 3115.01, *Joint Data Network (JDN) Operations*, and CJCSM 6120.01, *Joint Multi-Tactical Data Link (TDL) Operating Procedures*.

b. The JIC, Joint Analysis Center, or JISE will provide theater-level intelligence support to DCA, especially the IPB elements of the operation.

c. The NIST provides overall national intelligence support to the joint force J-2, but may be leveraged for specific DCA information if properly queried.

d. Individual components' supporting intelligence elements detect, identify, and track threats to warn and cue defensive assets, provide accurate launch and target points~~,~~ and analyze ~~of~~ potential adversary COAs. In addition, units charged with primary responsibilities to plan, execute, and control air and missile defense operations for their component may also serve as C4I integrators for ~~the~~ joint ~~force~~ DCA.

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APPENDIX A
AREA AIR DEFENSE PLAN FORMAT

Copy No.
Issuing Headquarters
Place of Issue
Date/Time Group of Signature

~~AREA AIR DEFENSE PLAN (~~AADP~~)~~: Operation/Exercise Number or Code Name

References: Maps, charts, and other relevant documents.

COMMAND RELATIONSHIPS. Briefly describe the command organization (composition and relationships) for ~~the Area Air Defense Commander's (AADC) implementation of~~ implementing ~~theater~~AOR/JOA-wide air defense operations envisioned by the JFC. Detailed information may be included in the command relationships annex. As a minimum, address JFC, component commanders, ~~Airspace Control Authority (~~ACA~~)~~, ~~Regional/Sector Air Defense Commanders (~~RADC/SADC~~)~~, ~~Joint Interface Control Officer (~~JICO~~)~~; alternate authorities and control center issues.

1. Situation. Briefly describe the situation that the plan addresses. The related operation plan in concept format (CONPLAN) or OPLAN should be identified as appropriate. Include a description of the conditions under which the guidance and procedures in the ~~area air defense plan~~ AADP are applicable (e.g., the exercise, ~~operation plan~~OPLAN, operation order, 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/operation plans received from higher authority, that apply to the plan.

b. Adversary Forces. Provide a reference to the Intelligence Annex of the governing OPLAN or CONPLAN and/or a top-level summary of pertinent intelligence data including information on the following:

(1) Composition, location, disposition, movements, and strengths of major adversary forces that can influence action in the operational area.

(2) Definition of threat axes, DCA operations, known ~~weapons of mass destruction (~~WMD~~)~~, and estimated adversary COAs.

(3) Known ~~Intelligence Preparation of the Battlespace (~~IPB~~)~~ for the operational area.

(4) Adversary vulnerabilities, COGs, and decisive points.

c. Friendly Forces. State information on friendly forces assigned.

(1) Describe air defense friendly forces, including ~~command and control (~~C2~~)~~, aircraft (including ARM-J, counterair, reconnaissance, surveillance and support), location of ~~surface-to-air missile~~ SAM units, and support forces.

d. Non-Allied Forces

(1) Describe neutral forces and air defense capabilities in or near the theater which 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 air traffic control information.

(2) Describe noncombatants 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 air defense tasks and the purposes and relationships to achieving the AADC's objectives.

3. Air Defense Operations

a. ~~Operational~~ Concept of Operations. Describe the Concept of Operations, including the mission assumptions, maintenance policies, and JOA within which the ~~area air defense plan~~ AADP applies.

(1) Air defense organization – air and surface, sensors, shooters and ~~command and control~~ 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 defending commander responsibilities, and allocation of forces.

(4) Bed down overview.

(5) Phases of air defensive operations in relation to JFC ~~operation plan~~ OPLAN.

(6) Timing and duration of phases.

b. 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 list of vital areas and target priorities policy and guidance, as well as return to ship/base procedures.

(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 ~~Cruise Missile~~CM/Land Attack ~~Cruise Missile~~ CM launch/detection; transporter/erector/launcher detection or ~~Theater Ballistic Missile (~~TBM~~)~~ launch; reconnaissance aircraft detection; adverse weather; or detection of time critical or time sensitive targets.

(3) ~~Rules of Engagement. (~~ROE~~)~~

(a) Include ~~identification~~ ID procedures and requirements and deconfliction procedures.

(b) Describe the ROE's impact and constraints of on joint air defense operations.

(4) Describe reporting requirements, including the ~~air tasking order (~~ATO~~)~~, special instructions, ACO, tactical operations data (TACOPDAT), Daily Intentions messages, operations task link (OPTASKLINK), and status reports.

(5) Describe/discuss interaction between air and missile defense operations and procedures and the airspace control plan.

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 air and missile defense operation. Indicate any transfer of forces contemplated during the air defense operation, including the time of expected transfer. Give locations of all pertinent ~~command and control~~ 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 codewords 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 their airspace control center.

6. AADP Guidance. The AADP is developed ~~by the AADC staff~~ in collaboration with the JFC, allies and coalition partners, and component commander staffs. 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 and OPTASKLINK.

(Signed) (Commander — AADC)

ANNEXES: As required.

DISTRIBUTION

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 adversary. 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 area of operation. For this paragraph, determine those factors of the situation that influence friendly and adversary actions and which, therefore, may influence the choice of a COA. In the absence of facts, use logical assumptions that might directly affect the mission. Includes analysis of the effects of pertinent characteristics on conducting DCA operations.

(1) Weather. Put the analysis of data from predicted weather and light conditions for the period in this paragraph. Assess how the weather affects friendly operations. Also include the evaluation of how weather and light conditions might affect the used of adversary UAVs; missiles; aircraft, both fixed- and rotary-wing; and airborne or air assault operations. Try to determine or predict when the adversary will probably 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 adversary NBC weapons; communications, EW and combat surveillance; unconventional warfare;

psychological 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 adversary will most probably use air assets.

(3) Other pertinent factors. List analysis of political, economic, sociological, psychological, and other factors (such as hydrography, environment, communications, science, technology, materiel, transportations, safety and accident prevention, and manpower). Include deduction about their effects on friendly and adversary operations.

b. Adversary Air and Missile Forces

(1) Disposition. List locations of adversary air and missile forces that will participate in operations. Determine combinations of air platforms that the adversary may use when conducting a particular type of operation.

(2) Composition. How adversary 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 adversary's location, doctrine, and the unit's 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 adversary fly during this operation?

(4) Other considerations. Adversary forces not discussed above.

(5) Recent and present significant activities. Summarize recent adversary activities that were both successful and unsuccessful. Highlight any adversary air activity to include number, type of air platforms, and locations.

(6) Peculiarities and weaknesses. Indicate adversary peculiarities and weaknesses that might influence combat effectiveness, including vulnerability to deception.

(7) Courses of Action. Identify available information from which to determine possible adversary COAs and their relation to the adversary's joint COA.

c. Friendly Forces. Identify disposition, composition, and strength. Highlight the vulnerability of the joint force to adversary 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 staff AOR. 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 resources that affect AADC's JOA.

(4) Comparison of requirements versus capabilities and recommended solutions.

(5) Key considerations (evaluation criteria) for COA supportability.

d. Assumptions.

3. ANALYSIS

Analyze each COA using evaluation criteria. Identify those aspects in the JFC's plan that creates 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; and

(7) key passive defense measures.

5. RECOMMENDATIONS AND CONCLUSIONS

Recommended COA based on the comparison.

a. Indicate which joint COA(s) DCA can best support (using the elements of who, what, when, where, how, and why).

b. Recommend list of DCA priorities.

c. State the recommended DCA organization for combat, and employment of other active DCA assets.

d. Possible OCA targets.

e. Passive and active DCA measures that will be most effective.

f. Issues, deficiencies, and risks with recommendations to reduce their impacts.

ANNEXES: (as required)

APPENDIX C
THEATER MISSILE SYSTEMS

1. Background

a. TMs are defined as ballistic missiles, cruise missiles, and ASMs (not including short-range, non-nuclear, direct fire missiles, bombs or rockets such as Maverick or wire-guided missiles). Their target is within a given theater of operation. TMs have unique capabilities that must be considered when planning countermeasures. For example, no other target system can put a warhead into the theater rear area or threaten neutral countries in a matter of minutes. Other target systems do not create public panic and a political situation each time a launch is broadcasted on television worldwide by reporters wearing gas masks. These unique traits, coupled with the elusive nature of the TM target system, require the dedicated attention of determined, knowledgeable professionals to effectively counter the threat.

b. Modern TMs have very long ranges and can launch a variety of warheads, including high explosive; NBC; etc. They are also currently difficult to counter. Because they are relatively cost effective weapons, ballistic missiles are weapons of choice for many developing nations. Such weapons provide an offensive capability and, when mated with a warhead of mass destruction, give a nation the ability to deter a potential adversary by holding population centers and/or military forces at risk. Rogue nations believe TMs provide them with a counter to sophisticated land, air, and naval forces. As a result, nations around the world are actively pursuing missile capabilities.

c. TMs may be used alone or in conjunction with other weapon systems. Their targets can vary from political to military, such as population centers, ports, airfield, headquarters, air defense sites, C2 elements, communications nodes, and logistic centers. They can quickly put key civilian facilities at risk, such as power and water stations, petroleum pumping and storage sites, and industrial complexes. Ballistic and cruise missiles also present a serious threat to merchant shipping, critical sea-lanes, and maritime operations in joint littoral warfare, as well as key offensive and defensive forces/complexes and support organizations. ASMs have also proven to be effective weapons against point targets, and they are difficult to defend against.

2. Generic Architecture

Although there are many variables between the different types of TMs, they generally share a common architecture. Countries possessing TMs either import them, reverse-engineer them and/or develop their own technology. Common aspects of all TM programs are:

a. Research and Development (R&D). If a country is developing its own missile system(s) or adapting a system purchased from another country, there will be a center, institution, and personnel responsible for the R&D effort. However, if a country purchases the complete TM system, there may be no R&D effort.

b. Manufacturing. Countries that develop their own systems or adapt those produced by other nations require dedicated manufacturing and testing facilities. They may also have to develop or refine the fuel for the missile systems. Although the fuels are of a specific type, they are commonly available on the international market from several sources.

c. Import. Countries that purchase systems from other nations will have prepared sites for receipt of missile system components and fuels. These ports of entry may be air-, land- (road or rail), or sea-based. These locations must have receipt, inspection, and storage capabilities. If the equipment requires assembly, there may be facilities created nearby to support these activities.

d. Transportation. TM components must move from their manufacturing or importing site by rail, road, air, and/or sea to garrison or permanent storage sites.

e. Missile Storage. Missile storage locations are required at the point of manufacture, at the point of receipt, in TM unit garrison locations, and at training installations. Missile storage sites are likely to be constructed and developed within projected operational areas as well.

f. Warhead Storage. Warhead storage sites are usually located in ammunition areas and may not be easily discernible from bunkers holding other munitions. However, WMD warheads require specialized storage, handling and, most notably, higher security.

g. Garrison. TM units are usually garrisoned at military bases. Most training and equipment maintenance occurs at these locations. Land-based units will likely move from their garrisons to conduct combat operations. Air and naval TM units may conduct wartime operations directly from their home air base or port facility.

h. Dispersal. During peacetime training or conflict, TM forces move from garrison or permanent storage sites to operating areas. These areas may include training areas, forward-operating bases (FOB), staging bases, hide locations, or air bases. The missiles are normally transported on a transporter-erector-launcher (missile platform) (TEL), or they can be moved by railcar or covered truck. For cruise missiles and ASMs, aircraft may move to designated dispersal or staging bases, while ships may move out of port to a designated operating area.

i. Assembly Areas. In most cases missiles and warheads are shipped and stored separately. One of the final stages of preparing the weapon for launching is mating the warhead to the missile body. This applies to training and combat operations.

j. Launch Areas. TM attacks normally take place from planned launch areas. The characteristics of the launch areas are dependent on missile-type. Ballistic missiles usually start from a hide position then move to the launch area. Aircraft and naval vessels usually proceed directly to a planned launch area from their bases.

k. Launch Preparation. After arrival at a launch area, most ballistic missiles require some prelaunch preparation. These activities may involve fueling and testing the missile and warhead components along with some assembly operations. Launch preparations for liquid-fueled TMs generally require longer set-up/check-out time than do solid fuel missiles. For cruise missiles

and ASMs, these activities will likely occur at an airfield or port and may involve simply moving the missile from a storage area to a delivery platform (aircraft or naval ship).

l. C4. Planning TM operations is normally a highly centralized process with tight control over the employment and selection of targets. Execution of TM operations may be either centralized or decentralized. The degree of centralization is generally determined by the amount of control desired by civilian or senior military leaders, the capability for secure radio or hardwire communications, the ability of the opposing forces to detect or locate transmitters, and the tactics employed. WMD-armed missiles will be tightly controlled because of their political sensitivity and the possibility of retaliation. Thus, WMD-associated TM units will normally require robust communication links or constant communication with national leadership for launch authorization.

m. Support Units. Most TM systems require an extensive support system. Support units provide a variety of functions to include maintenance, rearming and refueling, personnel replacement, etc. They also deliver replacement warheads and missiles and conduct all the electronic testing and repair. During peacetime, these units will probably be collocated with the TM firing units in garrison. In wartime, they may disperse to FOBs or forward-operating locations (FOLs), dispersal/staging airfields, or naval operating areas.

3. Theater Ballistic Missiles

a. **Definition.** TBMs or SSMs are characterized by their trajectory, having one or more boosters and an initial steering vector. They have a range of 30 to greater than 3300 kilometers (50 to 2000 miles) and can travel this distance in 5 to 20 minutes. Once launched, ballistic missiles are guided to their planned targets using gyroscopic assemblies.

b. **Threat Employment Concepts**

(1) Prime strategic targets for ballistic missiles are large, soft, heavily defended, and deep rear area facilities that are critical to a nation's warfighting ability. Examples include airfields, air defense sites, transportation centers (ports and airfields), logistic hubs, and national C2 nodes. Additionally, key population centers are prime targets whose attack might create panic among the populace and foster a political crisis. TBMs may also be used in a tactical sense to affect battlefield logistics and operations; although, this is less likely given the strategic importance of such weapons to developing nations.

(2) Mobility enhances TBM survivability and, conversely, complicates targeting efforts. Their long range affords the adversary increased options in selecting operating areas and determining potential targets. TBMs have been exported by many nations (the Scud and its derivatives being the most common). The Scud employs the full spectrum of warheads. The Scud, as well as the Soviet designed SS-21 Scarab, can be set up and fired in less than 45 minutes and subsequently relocated within minutes. Some modified versions of the Scud missile have demonstrated a tendency to break up during terminal phase descent; this break up further complicates defensive efforts.

(3) SAM systems have been modified into SSMs in China and South Korea. This trend will likely spread to other nations. As missile systems and missile technology proliferate, nations will acquire or be able to produce missile systems using solid fuels. This will significantly reduce the dwell time required for system checks and fueling during launch preparation. This reduced dwell time will significantly reduce the TMs signature and the time available for preemptive attack operations.

c. **Threat Employment Operations.** TBM operations are generally broken down into five major phases. These include readiness, deployment, employment, sustainment, and reconstitution.

(1) Readiness Phase. The readiness phase encompasses normal day-to-day peacetime operations. During this phase, TBM forces train on wartime tasks and practice doctrinal employment in the local training areas or in garrison. This normally entails missile erection, site preparation, TEL operations, and missile maintenance. Support units will perform maintenance on firing units and conduct resupply operations.

(2) Deployment Phase. The deployment phase may include initial movement from the garrison location(s) to the initial war fighting positions to support established objectives. TBM force deployment will depend on the range to the target, missile capability, terrain, and survivability considerations. Firing units will move to either hide positions or directly into launch positions. Support units will likely move to a FOB or FOL and from there conduct support to transload operations. (Note: **Deployment may or may not convey hostile intent, depending upon the circumstances.**)

(3) Employment Phase. The employment phase encompasses initial combat operations. During this phase, TELs move missiles to their initial firing positions from a hide site and then, after launch, move to another hide site or directly to transload operations, depending on the threat. The support unit will establish the transload location based upon doctrine, terrain, the TBM force commander's firing schedule, and the threat.

(4) Sustainment Phase. During the sustainment phase, support units will likely use a FOB or FOL to conduct the necessary repair/replacement operations to sustain the TBM force. Sustainment operations require support units to use lines of communications (LOCs) from garrison locations, field storage areas, and/or the manufacturing infrastructure/import facilities to the FOB and forward.

(5) Reconstitution Phase. The reconstitution phase encompasses continuous operations between firing units, support units, and higher echelon logistic locations to regenerate TBM forces.

d. **Threat Employment—TTPs**

(1) TEL Operations. TELs serve as the transporter and launch platform for missiles. The most common TEL is the Soviet era MAZ-543. TELs present a small, extremely mobile target with very short dwell time. The MAZ-543 has tremendous off-road mobility and can easily hide. TELs generally travel only short distances between hide sites, launch sites, and transload sites, unless required to return to the FOB or FOL for additional maintenance. A TEL will be in launch configuration for a very short period of time and can displace to a new hide site in a matter of minutes.

(2) Transload Site. The transload site is where fueled, ready missiles are loaded onto TELs. Support unit personnel, vehicles, and equipment from the FOB or FOL rendezvous at this site with firing unit TELs. At this site there are generally a number of vehicles: missile resupply vehicles (with one to three missiles), a crane (possibly attached to the resupply vehicle), and other ground support equipment (GSE) as required by the missile type. GSE likely may not have great off-road mobility; in such cases, transload sites will likely be only a short distance from improved roads. The transload site is usually an open area large enough to allow the crane to lift/pivot the missile onto the TEL, approximately 50 by 50 meters. This operation can occur in large buildings or underground facilities with sufficient height, approximately 20 meters. When detected, this site will remain vulnerable throughout its established dwell time.

(3) FOL. A FOL is typically where warheads and missiles are mated, missiles are fueled, and missiles are loaded onto the resupply vehicle. A FOL remains in place from half a day to 3 days. The FOL usually contains warheads and missile airframes, transporters, cranes, checkout vehicles, fuel trucks (vehicle and missile fuel), and resupply and other support vehicles. FOLs can be located in rural or urban settings, and may be hidden in a building complex or underground facility. The FOL has a larger footprint than TEL or transload operations but is still difficult to locate. Some countries may not employ FOLs, preferring to conduct these operations out of the FOB.

(4) FOB. The FOB is the main TM unit supply and storage activity and will be spread out over a large geographic area for survivability. The number of FOBs will depend on the size of the missile force (targets selected and acceptable travel distances for support units). In situations where a country's geographic area is small, it is possible that operations typically associated with the FOB could be conducted from garrison.

(a) A typical FOB contains warhead, missile and propellant storage sites; transporters and cranes; checkout vehicles; fuel trucks (vehicle and missile fuel); and resupply and other support vehicles. An FOB can be established in an urban environment hidden in large buildings or underground facilities or in the field. The FOB will normally deploy GSE to FOLs and/or transload sites as needed to sustain launch operations. FOBs require robust LOCs (primarily roads and rail lines) to support continuous operations.

(b) **The FOB cannot be easily hidden, but may be difficult to distinguish from other logistic facilities.** Once established, the FOB will probably not be moved in total, but

certain components may be moved to complicate detection, create a deception, or facilitate launch operations.

4. Cruise Missiles

a. **Definition.** Cruise missiles are defined as a guided missile, the major portion of whose flight path to its target is conducted at approximately constant velocity, and depends on the dynamic reaction of air for lift and upon propulsion forces to balance drag. A cruise missile is an unmanned, self-propelled vehicle that sustains flight through the use of aerodynamic lift over most of its flight. Cruise missiles usually navigate autonomously to the targets and depending on their sophistication can position themselves through a number of update methods along extended flight routes. Cruise missiles are capable of delivering the full complement of warheads; from conventional to WMD.

b. **Threat Cruise Missiles**

(1) Very few nations currently possess sophisticated cruise missiles, such as the US Navy Tomahawk land attack missiles or US Air Force conventional air launch cruise missile. Employment by developed nations has been limited. The majority of cruise missiles in potential threat nations are short-range anti-ship cruise missiles (ASCMs) with ranges up to 100 nautical miles (nm), such as China's Silkworm. Some countries are modifying ASCM for a land attack role.

(2) Future cruise missile technology will build on existing low observable, sensor defeating designs using radar absorbing materials and composite materials such as Kevlar or carbon fiber to further reduce their radar cross sections (RCSs) and render them more difficult to detect. Cruise missile are characterized as having the following features:

(a) RCS of .1 square meter or less (-10 decibel and lower)

(b) Low IR signature (varies by type of cruise missile)

(c) Acoustic signature (varies by type of cruise missile)

(d) Cruise altitude of 100' to 2000' above ground level or 50,000' above mean sea level

(e) Range of 100 to 1000 nms

(f) Payload of 200 to 1000 pounds

(g) Speed range of high subsonic (low altitude) or supersonic (high altitude)

(h) Air-, land-, or sea-launched

c. **Threat Cruise Missile Employment**

(1) Cruise missiles stress air defense systems because they are difficult for theater sensors and weapons systems to detect, identify, track, acquire, and destroy. Cruise missiles are normally more difficult to detect than the larger TBM because they do not give off as large a heat signature at launch and normally have a smaller RCS. Ground-based surveillance radars may have a difficult time detecting cruise missiles when in low level flight (following terrain contours) because of line-of-sight restrictions created by terrain masking. Similarly, airborne radar systems may have a difficult time isolating cruise missiles from ambient noise caused by ground clutter. These traits, when combined with radar evasion techniques and low observable (LO) construction methods, cause delays in detection and engagement decisions by battle managers. However, once detected in flight, cruise missiles can be engaged by fighters, ADA, and SAMs.

(2) The expected flight profile for a cruise missile is low-altitude, medium-to-high speed. Although a low altitude cruise missile flight profile presents a higher RCS view to airborne radar, it also requires the airborne radar to search through ground clutter. Ground radars may be able to detect the release of an air-launched cruise missile (ALCM), but will have increased difficulty in tracking the cruise missile at low altitudes.

(3) Sea-launched (SLCM) and ground-launched (GLCM) cruise missiles present opportunities for detection as well as challenges for surveillance systems. Surface launch systems must normally be boosted to "cruise" altitude. The boosted phase often uses a rocket motor that will produce an IR signature that could potentially be exploited by space-based or properly positioned theater assets. ALCMs do not have a boost plume since aircraft or UAV deliver them above the cruise altitude. Although the cruise missile has a small RCS, it is vulnerable to radar detection during descent to its low-level altitude. Once near the surface and in a terrain following mode, sensors have to filter radar ground clutter to extract a radar signature from these low-altitude profile missiles.

(4) High-altitude, high-mach profiles rely on altitude and speed to overcome defenses. Because the cruise missile is high, ground-based radars will not be obstructed by the curvature of the earth and airborne radars can discriminate them from ground clutter. As a result, when using the high-altitude profile, cruise missiles are more likely to be detected earlier in flight than when using a low-level profile.

(5) Cruise missiles provide a significant standoff range for the aircraft or launch platform and remove the "manned" component of the weapons system from the immediate target area. The release range of cruise missiles from aircraft and other platforms can easily be beyond a defender's radar and sensor range. The long distance release or launch of cruise missiles and their smaller radar signature increase the possibility that surveillance assets will not detect missiles. Battle managers require automated cues to narrow their focus in detecting cruise missiles in any surveillance area. Combining hostile aircraft attacks with cruise missile and ASM attacks may allow "leakers" to get through. Indeed, cruise missiles may resemble and be misidentified as manned aircraft.

(6) Rapid combat identification is **critical** for cruise missile defense. Rapid TBM identification is a less important factor because they can be readily identified hostile based on point of origin and identifiable flight profiles. Cruise missile defense is further complicated by the use of LO technology and SOF aircraft without identification-friend or foe transponders operating, thus requiring verification as friendly prior to attack. Cruise missiles make surveillance and detection difficult because their flight profiles are specifically designed to defeat or confuse radar tracking. As with ballistic missiles, the objective is to eliminate as many cruise missiles as possible before launch. Cruise missiles in flight are definitely TSTs. The challenge for defending against cruise missiles is to find them early, before launch if possible, and engage them before they can navigate to their targets.

(7) Training patterns or identifiable launch sequence events are rarely observed or practiced in an overt environment. Consequently, the probability of conclusively identifying a ground-launched cruise missile TEL using current sensor data is small. Attacking a cruise missile TEL requires the earliest possible detection of the target and the ability of sensors to discriminate between TELs and other targets. Targeting cruise missiles will therefore depend in great part on pre-hostility IPB efforts. Targeteers will require information on infrastructure, logistic support patterns, movement discipline, and signatures of typical storage and assembly facilities. Identification by signature is key to finding cruise missiles before launch, since detecting the launch itself or tracing the flight path back to the launch site may be extremely difficult when they are launched from maximum range.

d. **Cruise Missile Target Development**

(1) Procedures for finding and targeting cruise missiles on the ground are no different than for finding other targets using a variety of theater and national sensors. Space-based and theater reconnaissance, surveillance, and target acquisition assets will normally collect intelligence data on these targets prior to armed conflict as part of IPB. Sensors on JSTARS, UAVs, and SOF pass mobile and stationary cruise missile target information to analysts and battle managers by datalink or voice. Data collected and fused from multiple sensors will provide the necessary confirmation of the target. Characterization of a surface target as a WMD will depend on data from high-resolution sensors such as enhanced and inverse synthetic aperture radars. Immediate threat data will be broadcast over intelligence processing and transmissions systems such as tactical related applications and tactical data dissemination systems.

(2) When conflict begins, sensors must be used to validate known target information. Aircraft and naval launch platforms for ALCM and SLCM provide identifiable signatures against relatively uncluttered backgrounds (sky and sea) and will yield opportunities to detect, track, acquire, and attack these platforms. GLCMs will present a more difficult target set. The following is a discussion of targeting methods against each category:

(a) ALCM. Destroying ALCM-capable aircraft on the ground or neutralizing their supporting airstrips/bases is the best means to prevent ALCM employment. In this context, missions against this target system do not differ from other OCA missions in terms of tactics or

weapons. The IPB process must focus on providing the intelligence targeteers need to determine which aircraft and air bases support ALCM activity and task missions against them accordingly.

(b) SLCM. Destroying the launch platform in port is the best means to prevent SLCM launch. The IPB process will provide the naval order of battle information to identify specific SLCM carriers and support bases for targeteers and battle managers to task missions against them. Signatures of naval vessels and their substantial support base infrastructure will facilitate finding SLCM targets by satellite, UAV, and other surveillance platforms.

(c) GLCM. GLCM platforms are normally an adaptation of any available vehicle chassis capable of supporting one to two tons. Any medium-to-large size truck or tracked vehicle could be developed into a cruise missile TEL. These TELs will likely be considerably smaller and less distinct than heavier TBM TELs; however, a robust IPB effort can catalog such known and suspected vehicles for exploitation by surveillance sensors. GLCM deployment and training in suspect nations must be collected against and studied for behavioral cues to detection. Long-range GLCM permit the adversary to establish a large number of well dispersed, fixed-launch locations (both actual and decoy) deep within their own territory. The adversary can be expected to employ camouflage, concealment, and deception against fixed and mobile TELs to reduce probability of detection. Targeting mobile GLCM platforms or newly discovered fixed sites as TSTs will depend on a robust IPB; dynamic management of intelligence, surveillance, and reconnaissance assets; dedicated and trained analysts aided by technology improvements such as automatic target recognition systems; and a responsive C4I architecture.

5. Air-to-Surface Missiles

ASM employment can be expected on all battlefields. Like TBMs and cruise missiles, ASMs are capable of delivering a complete range of warheads and can be carried by a variety of rotary- and fixed-wing platforms. Flight profiles, short flight times, and reduced RCS make these missiles difficult to track, acquire, and target. ASMs increase the survivability of the delivery platform through standoff capability beyond the range of point defenses. Most of the North Atlantic Treaty Organization and former Warsaw Pact nations are equipped with US and Russian manufactured systems respectively and have exported these systems throughout the world. The best method for countering ASMs is to target the delivery platforms and related bases and facilities.

6. Conclusion

While each TM system is unique, each category (TBM, cruise missile, and ASMs) exhibits similar characteristics and functional operations. This appendix discusses the essential framework for each in a generic fashion and serves as a foundation for an initial understanding of how TMs operate. Specific analysis is required to apply this information to a particular missile system and country. The vignette at the end of this appendix is included as a reminder that facts must be proven, not simply accepted.

THE LURE OF THE UNEXPECTED

Deception is a key part of any combat operations. The examples below illustrate what happens when analysts stop analyzing events and begin to believe what they think they are seeing.

World War II

Prior to the beginning of the V-1 attacks against London on June 12, 1944, the Allied attack operations concentrated on an elaborate system of "sites" which were believed to be Nazi V-1 launch locations. The locations were dubbed "ski sites" because of the shape of several long, curved buildings that were characteristic in the aerial photographs of each location. These sites were targeted and heavily bombed from December 1943 through May 1944. Although the "ski sites" were largely destroyed, not one of the real V-1 sites was attacked during this period. Once Hitler unleashed his missile force on England in June, the volume of V-1 launches provided incontrovertible evidence that a second set of launch sites was actually being used. Not until then did the weight of the Allied bombing effort finally begin to shift to the correct targets. Even so, the real sites were so hard to find due to Nazi camouflage and concealment measures that attacks were still being made on nearby decoy "ski sites" until the end of June.

SOURCE: Based on Operation CROSSBOW Volume of the US Strategic Bombing Survey

Gulf War

The initial hope of the planners in Riyadh that heavy attacks on the fixed Scud sites during the opening hours of the air campaign would largely eliminate Iraq's capability to launch ballistic missiles against Israel or regional members of the US-led Coalition proved to be illusory. On the night of 16-17 January 1991, the fixed Scud launchers in western Iraq functioned as "decoys" that diverted attention away from the mobile launchers that had already deployed to their wartime "hide" sites, and the first of Iraq's extended-range Scuds were fired at Israel the following night. Once Scuds started falling, first on Israel and then on Saudi Arabia two days later, the next best military option would have been to locate and attack mobile launchers before they had time to fire. Soviet exercise patterns in central Europe with Scud-B's and Iraqi practice during the Iran-Iraq War, indicated that if the Iraqis followed prior practices, there might be enough pre-launch signatures and time to give patrolling aircraft some chance of attacking mobile launchers before they fired. However, the Iraqis dramatically cut their pre-launch set-up times, avoided any pre-launch electromagnetic emissions

> **that might give away their locations before launch, and seeded the launch areas with decoys (some of which were very high in fidelity). . . . most (and possibly all) of the roughly 100 mobile launchers reported destroyed by Coalition aircraft and special operation forces now appear to have been either decoys, other vehicles such as tanker trucks, or other objects unfortunate enough to provide "Scud-like" signatures.**
>
> **SOURCE: Gulf War Air Power Survey, 1993**

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APPENDIX D
REFERENCES

The development of JP 3-01.3 is based upon the following primary references.

1. Joint Publications

a. JP 0-2, *Unified Action Armed Forces (UNAAF).*

b. JP 1-01, *Joint Doctrine Development System.*

c. JP 1-02, *DOD Dictionary of Military and Associated Terms.*

d. JP 2-01, *Joint Intelligence Support to Military Operations.*

e. JP 2-01.3, *Joint Tactics, Techniques and Procedures for Joint Intelligence Preparation of the Battlespace.*

f. JP 3-0, *Doctrine for Joint Operations.*

g. JP 3-01, *Joint Doctrine for Countering Air and Missile Threats.*

h. JP 3-01.2, *Joint Doctrine for Offensive Operations for Countering Air and Missile Threats.* (under development)

i. JP 3-01.5, *Doctrine for Joint Theater Missile Defense.* (superseded upon approval of this publication and JP 3-01.2, cited above)

j. JP 3-05, *Doctrine for Joint Special Operations.*

k. JP 3-11, *Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments.*

l. JP 3-13, *Joint Doctrine for Information Operations.*

m. JP 3-14, *Joint Doctrine for Space Operations.*

n. JP 3-16, *Joint Doctrine for Multinational Operations.*

o. JP 3-52, *Doctrine for Joint Airspace Control in the Combat Zone.*

p. JP 3-54, *Joint Doctrine for Operations Security.*

q. JP 3-56.1, *Command and Control of Joint Air Operations.* (under revision as JP 3-30)

r. JP 5-0, *Doctrine for Planning Joint Operations*.

s. JP 6-0, *Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations*.

t. JTAMDO Battle Management Concept for 2010.

u. CJCSI 3121.01A, *Standing Rules of Engagement for US Forces.*

v. CJCSM 3115.01, *Joint Data Network.*

w. CJCSM 6120.01, *Tactical Command and Control Planning Guidance and Procedures for Joint Operations — Joint Interface Operational Procedures (JIOP) Planning Guidance.*

2. Multi-Service Publications

a. FM 3-01.15/MCRP 3-25E/NTTP 3-11.23/AFTTP(I) 3-2.31, *Multi-Service Procedures for a Joint Integrated Air Defense System (JIADS).*

b. FM 3-01.16/MCRP 2-12.1A/NTTP 2-01.2/AFTTP(I) 3-2.36 *Theater Missile Defense Intelligence Preparation of the Battlespace.*

c. FM 3-01.21/MCRP 3-42.1A/NWP 3-01.13/AFTTP(I) 3-2.24 *Multi-Service Procedures for Joint Theater Missile Target Development (JTMTD).*

d. FM 3-97.18/MCRP 3-25B/NWP 6-02/AFTTP (I) 3-2.5 *Brevity Codes.*

e. FM 100-103.2/MWP 3-25.2/AFTTP(I) 2-2.17, *Multi-Service Procedures for the Theater Air-Ground System (TAGS).*

f. FM 101-4/ MCRP 6-23A/NWP 3-13.1.16/AFTTP(I) 3-2.22, *Multi-Service Procedures for Joint Task Force Information Management*, dated April 1999.

3. US Army Publications

a. Field Manual 3-0, *Operations*.

b. Field Manual 44-100, *US Army Air Defense Operations*.

c. TRADOC Pam 525-91, *Integrating Concept for Theater Missile Defense*, 7 Feb 2000.

4. US Navy Publications

a. ~~Naval~~ Navy Warfare Publication 3-01.01, *Antiair Warfare*.

b. Navy Warfare Publication 3-56(Rev. A), *Composite Warfare Commander's Manual.*

c. Navy Warfare Publication 3-56.1 (Rev. A), *Naval Air Operations Center Organizations and Processes.*

5. US Marine Corps Publications

a. Marine Corps ~~Warfare~~ Warfighting Publication 3-2, *Aviation Operations*.

b. ~~Fleet Marine Force Manual 3-50~~Marine Corps Warfighting Publication 3-22, *Antiair Warfare*.

6. US Air Force Publications

a. Air Force Doctrine Document 2-1.1, *Counterair Operations*.

b. Air Force Doctrine Document 2-4.1, *Force Protection.*

7. Other Publications

Allied Joint Publication 3.3, *Allied Joint Air and Space Operations Doctrine*, 3rd draft. (NATO)

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APPENDIX E
ADMINISTRATIVE INSTRUCTIONS

1. User Comments

Users in the field are highly encouraged to submit comments on this publication to: Commander, United States Joint Forces Command, Joint Warfighting Center Code JW100, 116 Lake View Parkway, Suffolk, VA 23435-2697. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

2. Authorship

The lead agent for this publication is the US Army. The Joint Staff doctrine sponsor for this publication is the Director for Operations (J-3).

3. Supersession

This publication supersedes JP 3-01.5, 22 February 1996, *Doctrine for Joint Theater Missile Defense,* and JP 3-01.3, 23 May 1964, *Doctrine for Air Defense from Overseas Land Areas,* with Interim Change 1. It will be jointly effective with the publication of the new JP 3-01.2, *Joint Doctrine for Offensive Operations for Countering Air and Missile Threats;* neither publication will be effective without the other.

4. Change Recommendations

a. Recommendations for urgent changes to this publication should be submitted:

TO: CSA WASHINGTON DC//DAMO-SSP//
INFO: JOINT STAFF WASHINGTON DC//J7-JDETD//

Routine changes should be submitted to the Director for Operational Plans and Joint Force Development (J-7), JDETD, 7000 Joint Staff, Pentagon, Washington, DC 20318-7000, with info copies to the USJFCOM JWFC.

b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff 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 Military Services and other organizations are requested to notify the Director, J-7, Joint Staff, when changes to source documents reflected in this publication are initiated.

c. Record of Changes:

CHANGE NUMBER	COPY NUMBER	DATE OF CHANGE	DATE ENTERED	POSTED BY	REMARKS

5. Distribution

a. Additional copies of this publication can be obtained through Service publication centers listed below (initial contact) or the USJFCOM JWFC in the event that the joint publication is not available from the Service.

b. Only approved joint publications and joint test publications are releasable outside the combatant commands, Services, and Joint Staff. Release of any classified joint publication to foreign governments or foreign nationals must be requested through the local embassy (Defense Attaché Office) to DIA Foreign Liaison Office, PO-FL, Room 1E811, 7400 Defense Pentagon, Washington, DC 20301-7400.

c. Additional copies should be obtained from the Military Service assigned administrative support responsibility by DOD Directive 5100.3, 15 November 1999, *Support of the Headquarters of Unified, Specified, and Subordinate Joint Commands.*

Army:	US Army AG Publication Center SL 1655 Woodson Road Attn: Joint Publications St. Louis, MO 63114-6181
Air Force:	Air Force Publications Distribution Center 2800 Eastern Boulevard Baltimore, MD 21220-2896
Navy:	CO, Naval Inventory Control Point 700 Robbins Avenue Bldg 1, Customer Service Philadelphia, PA 19111-5099
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GLOSSARY

PART I — ABBREVIATIONS AND ACRONYMS

AADC	area air defense commander
AADP	area air defense plan
AAMDC	Army air and missile defense command
AAW	antiair warfare
ACA	airspace control authority
ACM	airspace control measure~~s~~
ACO	airspace control order
ACP	airspace control plan
ADA	air defense artillery
ADC	air defense commander
ALCM	air-launched cruise missile
AO	area of operations
AOC	aerospace operations center
AOR	area of responsibility
ARFOR	Army forces
ASCM	anti-slip cruise missile
ASM	air-to-surface missile
ATC	air traffic control
ATO	air tasking order
AWACS	airborne warning and control system
BCA	border crossing authority
BCD	battlefield ~~coordinating~~ coordination detachment
C2	command and control
C2W	command and control warfare
C4	command, control, communications, and computers
C4I	command, control, communications, computers, and intelligence
C4ISR	command, control, communications, computer, intelligence, surveillance, and reconnaissance
CA	counterair
CAL	critical asset list
CAP	combat air patrol
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
CM	cruise missile
COA	course of action
COG	center of gravity
CONPLAN	operation plan in concept format
CRC	control and reporting center

DAADC	deputy area air defense commander
DAL	defended asset list
DCA	defensive counterair
EAC	echelons above Corps
EW	electronic warfare
FA	formation assessment
FDC	fire direction center
FEZ	fighter engagement zone
FOB	forward-operating base
FOL	forward-operating location
GLCM	ground-launched cruise missile
GSE	ground support equipment
HIMAD	high-to-medium altitude ~~missile~~ air defense
HIMEZ	high-altitude missile engagement zone
HN	host nation
HVA	high value asset
HVAA	high value airborne asset
IADS	integrated air defense system
IAW	in accordance with
ID	identification
IO	information operations
IPB	intelligence preparation of the battlespace
IR	infrared
ISR	intelligence, surveillance and reconnaissance
J-2	~~I~~intelligence ~~D~~directorate of a joint staff
J-3	~~O~~operations ~~D~~directorate of a joint staff
JAOC	joint air operations center
JEZ	joint engagement zone
JFACC	joint force air component commander
JFC	joint force commander
JIC	joint intelligence center
JICO	joint interface control officer
JIPB	joint intelligence preparation of the battlespace
JISE	joint intelligence support element
JOA	joint operations area
JP	joint publication
JSTARS	joint surveillance and target attack radar system
JTAGS	joint tactical ground station
JTMD	joint theater missile defense
LO	low observable

LOC	line of communications
LOMEZ	low missile engagement zone
MAGTF	Marine air-ground task force
MEZ	missile engagement zone
MNF	multinational force
MNFC	multinational force commander
MOOTW	military operations other than war
NBC	nuclear, biological, and chemical
~~NCA~~	~~National Command Authorities~~
NIST	national intelligence support team
nm	nautical mile
NRT	near real time
OCA	offensive counterair
OPCON	operational control
OPLAN	operation plan
OPSEC	operational security
OPTASKLINK	operations task link
PAO	public affairs office
R&D	research and development
RADC	regional air defense commander
RCS	radar cross-section
RJ	Rivet Joint
ROE	rules of engagement
SADC	sector air defense commander
SAM	surface-to-air missile
SHORAD	short-range air defense
SHORAD~~(~~EZ~~)~~	~~short ranged~~ short-range air defense ~~(~~engagement zone~~)~~
SLCM	sea-launched cruise missile
SOF	special operations forces
SROE	standing rules of engagement
SSM	surface-to-surface missile
TACC	tactical air command center (USMC)
TACON	tactical control
TACOPDAT	tactical operations data
TACS	theater air control system
~~TADIL~~	~~tactical digital information link~~
TAOC	tactical air operations center
TBM	theater ballistic missile
TEL	transporter-erector-launcher (missile platform)

TM	theater missile
TST	time-sensitive target
TTP	tactics, techniques and procedures
UAV	unmanned aerial vehicle
WCS	weapons control status
WEZ	weapon engagement zone
WMD	weapons of mass destruction

PART II — TERMS AND DEFINITIONS

active air defense. Direct defensive action taken to destroy, nullify, or reduce the effectiveness of hostile air and missile threats against friendly forces and assets. It includes the use of aircraft, air defense weapons, electronic warfare, and other available weapons. (JP 1-02)

air defense. All defensive measures designed to destroy attacking enemy aircraft or missiles in the Earth's envelope of atmosphere, or to nullify or reduce the effectiveness of such attack. Also called AD. (JP 1-02)

air defense area. ~~1. overseas--A specifically defined airspace for which air defense must be planned and provided. 2. United States~~ US 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. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

air defense battle zone. None. (Upon approval of this publication, this term and its definition will be deleted from JP 1-02.)

air defense direction center. An installation having the capability of performing air assignment, surveillance, interception, ~~control,~~ and direction of allocated air defense weapons within an assigned sector of responsibility. It may also have an identification capability. Also called fire direction center. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

air defense division. None. (Upon approval of this publication, this term and its definition will be deleted from JP 1-02.)

air defense operations area. An area and the airspace above it within which procedures are established to minimize mutual interference between air defense and other operations. It may include designation of one or more of the following: air defense action area, air defense area; air defense identification zone, and/or weapons engagement zone ~~firepower umbrella~~. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

air defense readiness. An operational status requiring air defense forces to maintain higher than ordinary preparedness for a ~~short~~ specified period of time. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

air interception. 1. To effect visual or electronic contact by a friendly aircraft with another aircraft. Normally, the air intercept is conducted in the following five phases: a. climb phase--Airborne to cruising altitude. b. maneuver phase--Receipt of initial vector to target

until beginning transition to attack speed and altitude. c. transition phase--Increase or decrease of speed and altitude required for the attack. d. attack phase--Turn to attack heading, acquire target, complete attack, and turn to breakaway heading. e. recovery phase--Breakaway to landing. 2. For missile engagements, the point in time when the missile either hits the target or detonates in proximity to it. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

airspace control authority. The commander designated to assume overall responsibility for the operation of the airspace control system in the airspace control area. Also called ACA. (JP 1-02)

airspace control order. An order implementing the airspace control plan that provides the details of the approved requests for airspace control measures. It is published either as part of the air tasking order or as a separate document. Also called ACO. (JP 1-02)

airspace control plan. The document approved by the joint force commander that provides specific planning guidance and procedures for the airspace control system for the joint force area of responsibility and/or joint operations area. Also called ACP. (JP 1-02)

air superiority. That degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given time and place without prohibitive interference by the opposing force. (JP 1-02)

air supremacy. That degree of air superiority wherein the opposing air force is incapable of effective interference. (JP 1-02)

apportionment (air). The determination and assignment of the total expected ~~air~~ effort by percentage and/or by priority that should be devoted to the various air operations for a given period of time. (JP 1-02)

area air defense commander. Within a unified command, subordinate unified command, or joint task force, the commander will assign overall responsibility for air defense to a single commander. Normally, this will be the component commander with the preponderance of air defense capability and the command, control, and communications capability to plan and execute integrated air defense operations. Representation from the other components involved will be provided, as appropriate, to the area air defense commander's headquarters. Also called AADC. (JP 1-02)

area air defense plan. The document approved by the joint force commander that provides specific planning guidance and procedures for area air defense for the joint force area of responsibility and/or joint operations area. The plan should contain detailed weapons control and engagement procedures and be closely integrated with the airspace control plan. Also called AADP. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

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. It is used as far from the force as control conditions permit, giving added protection against raids that use the most direct routes of approach. Also called barrier CAP. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

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. (JP 1-02)

combat identification. The process of attaining an accurate characterization of detected objects in the battlespace sufficient to support an engagement decision. The combat identification process will result in the classification of contacts as friend, enemy, neutral, or unknown. Also called CID. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

coordinating altitude. A procedural airspace control method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly and above which rotary-winged aircraft normally will not fly. The coordinating altitude is normally specified in the airspace control plan and may include a buffer zone for small altitude deviations. (JP 1-02)

counterair. A mission that integrates offensive and defensive operations to attain and maintain a desired degree of air superiority. Counterair missions are designed to destroy or negate enemy aircraft and missiles, both before and after launch. (JP 1-02)

defended asset list. In defensive counterair operations, a listing of those critical assets that will receive theater level air defense protection. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

defense in depth. The siting of mutually supporting defense positions designed to absorb and progressively weaken attack, prevent initial observations of the whole position by the enemy, and to allow the commander to maneuver the reserve. (JP 1-02)

defensive counterair. All defensive measures designed to detect, identify, intercept, and destroy or negate enemy forces attempting to attack or penetrate the friendly air environment. Also called DCA. (JP 1-02)

direct support. A mission requiring a force to support another specific force and authorizing it to answer directly the supported force's request for assistance. Also called DS. (JP 1-02)

electronic warfare. Any military action involving the use of electromagnetic and directed energy to control the electromagnetic spectrum or to attack the enemy. Also called EW. The three major subdivisions within electronic warfare are: electronic attack, electronic protection, and electronic warfare support. a. electronic attack. That division of electronic

warfare involving the use of electromagnetic energy, directed energy, or antiradiation weapons to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability and is considered a form of fires. Also called EA. ~~EA~~ Electronic attack includes: 1) actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, such as jamming and electromagnetic deception, and 2) employment of weapons that use either electromagnetic or directed energy as their primary destructive mechanism (lasers, radio frequency weapons, particle beams) ~~or anti-radiation weapons~~. b. electronic protection. That division of electronic warfare involving actions taken to protect personnel, facilities, and equipment from any effects of friendly or enemy employment of electronic warfare that degrade, neutralize, or destroy friendly combat capability. Also called EP. c. electronic warfare support. That division of electronic warfare involving actions tasked by, or under direct control of, an operational commander to search for, intercept, identify, and locate or localize sources of intentional and unintentional radiated electromagnetic energy for the purpose of immediate threat recognition, targeting, planning, and conduct of future operations. Thus, electronic warfare support provides information required for ~~immediate~~ decisions involving electronic warfare operations and other tactical actions such as threat avoidance, targeting, and homing. Also called ES. Electronic warfare support data can be used to produce signals intelligence, ~~both communications intelligence, and electronics intelligence~~ provide targeting for electronic or destructive attack and produce measurement and signature intelligence. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

fires. The effects of lethal or nonlethal weapons. (JP 1-02)

high value airborne asset protection. A defensive counterair mission ~~which~~ that defends airborne national assets which are so important that the loss of even one could seriously impact US warfighting capabilities or provide the enemy with significant propaganda value. Examples of high value airborne assets are Airborne Warning and Control System, Rivet Joint, Joint Surveillance and Target Attack Radar System, and Compass Call. Also called HVAA protection. See also defensive counterair. (JP 1-02)

impact point prediction. Prediction of the point on the ~~e~~Earth's surface where a specific reentry vehicle will impact, usually specified in terms of the circular error probable ~~(CEP)~~, the radius of a circle in which half of the vehicles are expected to fall. The prediction includes the perturbing effects of the atmosphere and resultant uncertainties. Also called IPP. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

information operations. Actions taken to affect adversary information and information systems while defending one's own information and information systems. Also called IO. (JP 1-02)

intelligence preparation of the battlespace. An analytical methodology employed to reduce uncertainties concerning the enemy, environment, and terrain for all types of operations. Intelligence preparation of the battlespace builds an extensive data base for each potential

area in which a unit may be required to operate. The database is then analyzed in detail to determine the impact of the enemy, environment, and terrain on operations and presents it in graphic form. Intelligence preparation of the battlespace is a continuing process. Also called IPB. (JP 1-02)

joint force air component commander. The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. The joint force air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called JFACC. (JP 1-02)

joint force commander. A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (JP 1-02)

joint intelligence preparation of the battlespace. The analytical process used by joint intelligence organizations to produce intelligence assessments, estimates and other intelligence products in support of the joint force commander's decisionmaking process. It is a continuous process that includes defining the total battlespace environment; describing the battlespace's effects; evaluating the adversary; and determining and describing adversary potential courses of action. The process is used to analyze the air, land, sea, space, electromagnetic, cyberspace, and human dimensions of the environment and to determine an opponent's capabilities to operate in each. Joint intelligence preparation of the battlespace products are used by the joint force and component command staffs in preparing their estimates and are also applied during the analysis and selection of friendly courses of action. Also called JIPB. (JP 1-02)

joint interface control officer. The ~~JICO is the~~ senior interface control officer in the joint force. Responsible for joint and combined interoperability in the management of the multi-tactical digital information link (TADIL) networks employed in a joint integrated air defense system ~~(JIADS)~~. The ~~JICO~~ joint interface control officer will develop and validate this multi-TADIL network, coordinate development of all links, conduct dynamic-link architecture and network design planning, and oversee ~~the JICO~~ operations of a coordination cell. Also called JICO. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

joint theater missile defense. The integration of joint force capabilities to destroy enemy theater missiles in flight or prior to launch or to otherwise disrupt the enemy's theater missile operations through an appropriate mix of mutually supportive passive missile defense; active missile defense; attack operations; and supporting command, control, communications, computers, and intelligence measures. Enemy theater missiles are those that are aimed at targets outside the continental United States. Also called JTMD. (JP 1-02)

offensive counterair. Offensive operations to destroy, disrupt, or neutralize enemy aircraft, missiles, launch platforms, and their supporting structures and systems both before and after launch, but as close to their source as possible. Offensive counterair operations range throughout enemy territory and are generally conducted at the initiative of friendly forces. These operations include attack operations, fighter sweep, escort, and suppression of enemy air defenses. Also called OCA. (JP 1-02)

offensive counterair attack operations. Offensive action in support of the offensive counterair mission against surface targets ~~which~~ that contribute to the enemy's air power capabilities. The objective of attack operations is to prevent the hostile use of aircraft and missile forces by attacking targets such as missile launch sites, airfields, naval vessels, command and control nodes, munitions stockpiles, and supporting infrastructure. Attack operations may be performed by fixed- or ~~rotary~~ rotary-wing aircraft, surface-to-surface weapons, special operations forces, or ground forces. Also called OCA attack ops. (JP 1-02)

operational control. Command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority) and may be delegated within the command. When forces are transferred between combatant commands, the command relationship the gaining commander will exercise (and the losing commander will relinquish) over these forces must be specified by the Secretary of Defense. Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions; it does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called OPCON. (JP 1-02)

passive air defense. All measures, other than active air defense, taken to minimize the effectiveness of hostile air and missile threats against friendly forces and assets. These measures include camouflage, concealment, deception, dispersion, reconstitution, redundancy, detection and warning systems, and the use of protective construction. (JP 1-02)

positive control. A method of airspace control ~~which~~ that relies on positive identification, tracking, and direction of aircraft within an airspace, conducted with electronic means by an agency having the authority and responsibility therein. (JP 1-02)

procedural control. A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (JP 1-02)

regional air defense commander. Officer responsible for execution of the air and missile defense plan in his assigned region in accordance with the joint force commander's operational concept and guidance from the area air defense commander. The regional air defense commander assigns assets that have been allocated and directs engagements in the assigned region. Also called RADC. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

rules of engagement. Directives issued by competent military authority ~~which~~ that delineate the circumstances and limitations under which United States forces will initiate and/or continue combat engagement with other forces encountered. Also called ROE. (JP 1-02)

sector air defense commander. Officer responsible for execution of the air and missile defense plan in his assigned sector in accordance with the joint force commander's operational concept and guidance from the regional air defense commander. The sector air defense commander assigns assets that have been allocated and directs engagements in the assigned sector. Also called SADC. (Upon approval of this publication, this term and its definition will be included in JP 1-02.)

supported commander. 1. The commander having primary responsibility for all aspects of a task assigned by the Joint Strategic Capabilities Plan or other joint operation planning authority. In the context of joint operation planning, this term refers to the commander who prepares operation plans or operation orders in response to requirements of the Chairman of the Joint Chiefs of Staff. 2. In the context of a support command relationship, the commander who receives assistance from another commander's force or capabilities, and who is responsible for ensuring that the supporting commander understands the assistance required. (JP 1-02)

supporting commander. 1. A commander who provides augmentation forces or other support to a supported commander or who develops a supporting plan. Includes the designated combatant commands and Defense agencies as appropriate. 2. In the context of a support command relationship, the commander who aids, protects, complements, or sustains another commander's force, and who is responsible for providing the assistance required by the supported commander. (JP 1-02)

tactical control. Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. When forces are transferred between combatant commands, the command relationship the gaining commander will exercise (and the losing commander will relinquish) over these forces must be specified by the Secretary of Defense. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task. Also called TACON. (JP 1-02)

tactical digital information link. A Joint Staff-approved, standardized communication link suitable for transmission of digital information. ~~TADILs~~ Tactical digital information links interface two or more command and control or weapons systems via a single or multiple network architecture and multiple communication media for exchange of tactical information. Also called ~~TADIL~~ TDL. (Upon approval of this publication, this term and its definition will modify the existing term and its definition and will be included in JP 1-02.)

tactical warning. 1. A warning after initiation of a threatening or hostile act based on an evaluation of information from all available sources. 2. In satellite and missile surveillance, a notification to operational command centers that a specific threat event is occurring. The component elements that describe threat events are as follows: a. country of origin — Country or countries initiating hostilities; b. event type and size — Identification of the type of event and determination of the size or number of weapons; c. country under attack — Determined by observing trajectory of an object and predicting its impact point; and d. event time — Time the hostile event occurred. Also called integrated tactical warning. (JP 1-02)

theater missile. A missile, which may be a ballistic missile, a cruise missile, or an air-to-surface missile (not including short-range, non-nuclear, direct fire missiles, bombs, or rockets such as Maverick or wire-guided missiles), whose target is within a given theater of operation. Also called TM. (JP 1-02)

weapon engagement zone. In air defense, airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with a particular weapon system. Also called WEZ. a. 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. b. high-altitude missile engagement zone. In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with high-altitude surface-to-air missiles. Also called HIMEZ. c. low-altitude missile engagement zone. In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with low- to medium-altitude surface-to-air missiles. Also called LOMEZ. d. short-range air defense engagement zone. In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with short-range air defense weapons. It may be established within a low- or high-altitude missile engagement zone. Also called SHORADEZ. e. joint engagement zone. In air defense, that airspace of defined dimensions within which multiple air defense systems (surface-to-air missiles and aircraft) are simultaneously employed to engage air threats. Also called JEZ. (JP 1-02)

weapons of mass destruction. Weapons that are capable of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Weapons of mass destruction can be high explosives or nuclear, biological, chemical, and radiological weapons, but exclude the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. Also called WMD. (JP 1-02)

weapons readiness state. The degree of readiness of air defense weapons which can become airborne or be launched to carry out an assigned task. Weapons readiness states are expressed in numbers of weapons and numbers of minutes. Weapon readiness states are defined as follows: a. 2 minutes — Weapons can be launched within two minutes. b. 5 minutes — Weapons can be launched within five minutes. c. 15 minutes — Weapons can be launched within fifteen minutes. d. 30 minutes — Weapons can be launched within thirty minutes. e. 1 hour — Weapons can be launched within one hour. f. 3 hours — Weapons can be launched within three hours. g. released — Weapons are released from defense commitment for a specified period of time. (JP 1-02)

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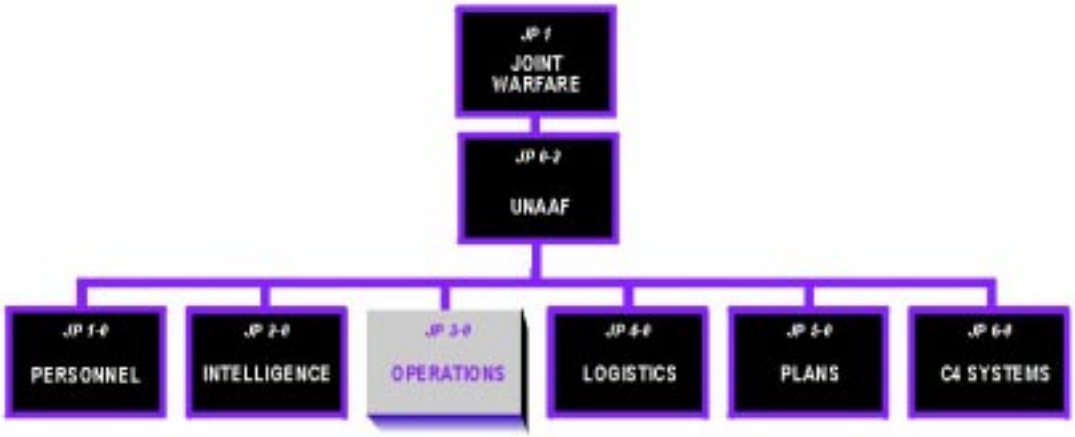
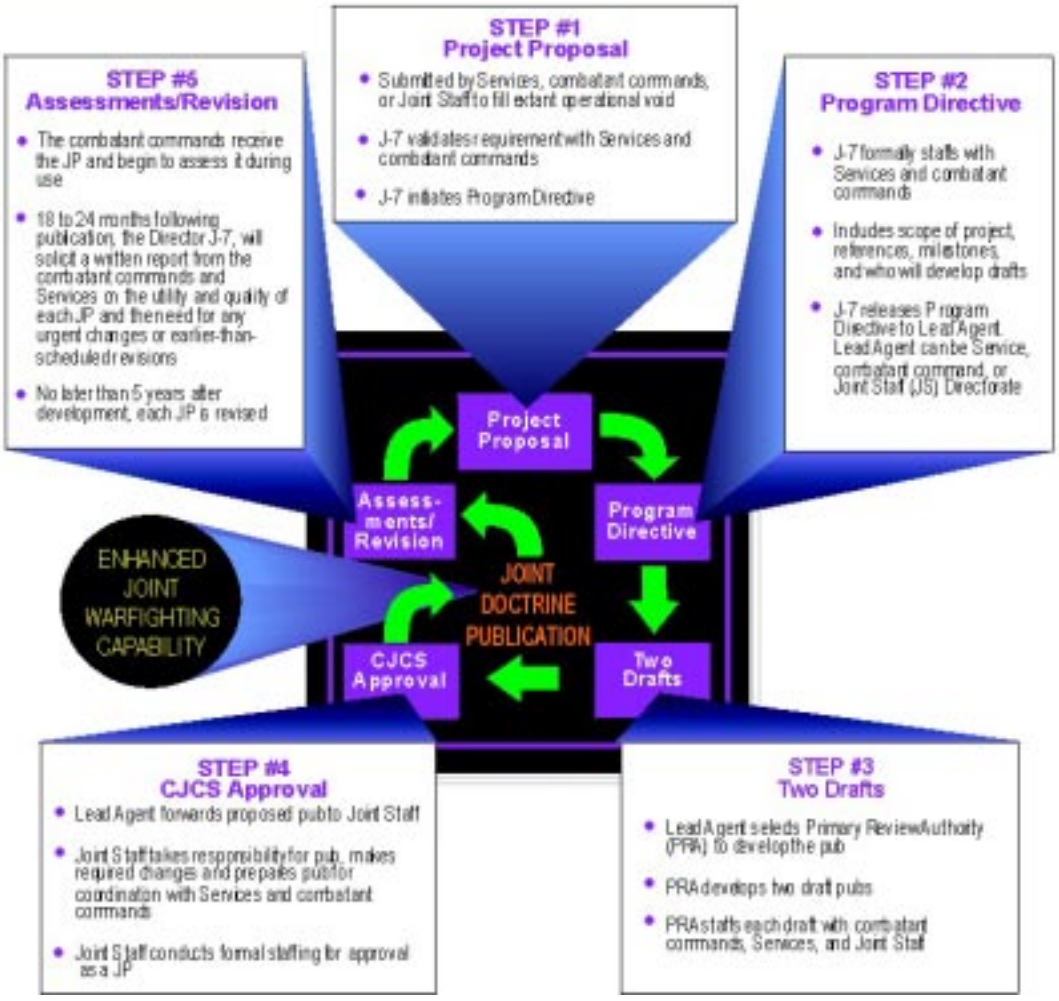


All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy as shown in the chart above. **Joint Publication (JP) 3-01.3** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:

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