

Joint Publication 3-52



Joint Airspace Control



13 November 2014



PREFACE

1. Scope

This publication provides joint doctrine to plan, execute, and assess airspace control during joint operations across the range of military operations.

2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff (CJCS). It sets forth joint doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations and provides the doctrinal basis for interagency coordination and US military involvement in multinational operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders (JFCs) and prescribes joint 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. Joint 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 CJCS, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and procedures ratified by the United States. For doctrine and procedures not ratified by the 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:



DAVID L. GOLDFEIN, Lt Gen, USAF
Director, Joint Staff

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**SUMMARY OF CHANGES
REVISION OF JOINT PUBLICATION 3-52
DATED 20 MAY 2010**

- **Describes the relationship between airspace control and airspace management.**
- **Introduces airspace control elements as a generic reference for tactical level units performing airspace control.**
- **Provides added detail on positive and procedural control methods, and associated risk considerations.**
- **Introduces airspace control assessment considerations.**
- **Expands the discussion of airspace control considerations by phase.**
- **Adds a new Appendix C, “Coordination Measures,” that provides descriptions and planning considerations for various airspace coordinating measures, fire support coordination measures, maneuver control measures, air reference measures, air defense measures, maritime defense measures, and air traffic control measures used in conducting airspace control.**
- **Introduces definitions for “coordination level” and “restricted operations zone.”**
- **Modifies the definitions for “airspace control,” “airspace control order,” “base defense zone,” “coordinating altitude,” “high-density airspace control zone,” “restricted areas (air),” and “standard use Army aircraft flight route.”**
- **Removes the terms and definitions from Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, for “air miss,” “air route traffic control center,” “airspace control sector,” “airspace reservation,” “air traffic controller,” “airways station,” “alerting service,” “approach time,” “automatic approach and landing,” “controlled airspace,” “flight information region,” “flight information service,” “internal waters,” “near miss (aircraft),” “penetration (air traffic control),” “prohibited area,” “radar advisory,” “radial,” “restricted operations area,” “surveillance approach,” and “terminal control area.”**

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EXECUTIVE SUMMARY COMMANDER'S OVERVIEW

- Provides an introduction to airspace control and its basic principles
 - Describes the organization and coordination of airspace control
 - Presents airspace control planning considerations
 - Discusses airspace control execution by phase
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Introduction

General

This joint publication prescribes doctrine for airspace control in the operational area. The degree of control may vary based on international agreements, enemy and friendly force structures and deployments, the commander's concept of operations (CONOPS), and operational environments in foreign countries, on the high seas, and within amphibious objective areas.

Airspace Control

Airspace control increases operational effectiveness by promoting the safe, efficient, and flexible use of airspace while minimizing restraints on airspace users. Airspace control includes coordinating, integrating, and regulating airspace to increase operational effectiveness. Effective airspace control reduces the risk of unintended engagements against friendly, civil, and neutral aircraft, enhances air defense operations, and permits greater flexibility of joint operations.

Basic Principles

The basic principles of airspace control are:

The primary goal of airspace control is to enhance effectiveness of joint and multinational air operations. Two major reasons for close coordination between airspace control, air traffic control, and air and missile defense elements are to reduce the risk of unintended engagements

- Unity of effort requires the airspace control system and associated procedures to be fully coordinated, integrated, and centrally planned by the airspace control authority.
- Reduce the risk of unintended engagements against friendly, civil, and neutral aircraft, and optimize the effectiveness of air defense.
- Centralized airspace planning facilitates meeting joint force commander priorities.
- Decentralized execution gives subordinate commanders the flexibility to execute their missions effectively.

against friendly, civil, and neutral aircraft, and increase the effectiveness of air defense.

- Maintain close liaison and coordination among all airspace users.
- Require common airspace control procedures, which include procedural and/or positive control measures.
- Require reliable, jam-resistant, beyond line-of-sight, and secure communications networks.
- Require integrated, interoperable, survivable, and redundant airspace control systems.
- Respond to developing threat conditions and to the unfolding operation.
- Airspace control relies upon airspace management capabilities provided by airspace control elements and US civil and host-nation air traffic control.
- Emphasize flexibility and simplicity.
- Support 24-hour operations in all weather and environmental conditions.
- Require appropriate training for effective and safe airspace control operations.

Organization and Coordination

Organization

The **joint force commander (JFC)** is responsible for airspace control in the joint operations area (JOA). The JFC will normally designate a joint force air component commander (JFACC) and assign responsibilities.

The **JFACC** plans, coordinates, and monitors joint air operations, and allocates and tasks joint air operations forces based on the JFC's CONOPS and air apportionment decision. When the JFC designates a JFACC, the JFC also normally designates the JFACC as the area air defense commander (AADC) and airspace control authority (ACA) because the three functions are so integral to one another.

Component commanders advise the JFC on the employment of component forces and the direction and control of those forces. Each component commander plans and executes a portion of the total air effort and interacts with other components.

The **ACA** develops airspace control policies and procedures for all airspace users and airspace control elements.

The **AADC** is responsible for defensive counterair (DCA) operations, which include both air and missile threats. The AADC identifies airspace control requirements to support DCA operations.

Airspace Control Plan

The airspace control plan (ACP) establishes procedures for the airspace control system (ACS) in the operational area. The JFC approves the ACP. To provide effective operational procedures, the ACP and area air defense plan must be integrated with the JFC's operation plan and orders.

Airspace Control Order

The airspace control order (ACO) is an order that provides the details of the approved requests for coordination measures such as airspace coordinating measures (ACMs), air defense measures, and fire support coordination measures (FSCMs). It is published either as part of the air tasking order (ATO) or as a separate document. The ACO defines and establishes airspace for military operations as coordinated by the ACA.

The Joint Air Tasking Cycle

The joint air tasking process is a systematic cycle that focuses joint air efforts on supporting operational requirements. Much of the day-to-day tasking cycle is conducted through an interrelated series of information exchanges and active involvement in plan development, target development, air execution, and assessment, which provide a means of requesting and scheduling joint air missions.

Airspace Control Planning Considerations

Airspace Control Risk Considerations

The JFC's acceptable level of risk for all airspace users (including fires) should be clearly delineated in the ACP. In general terms, high risk prioritizes mission accomplishment over the preservation of resources; moderate risk seeks to balance mission accomplishment with potential resource losses; and low risk prioritizes the preservation of resources.

Planning for Airspace Control

Each operational area will have specific operational requirements for airspace control. These requirements should be determined as early as possible and incorporated in the overall joint force planning effort. Political constraints and national and military ACSs, including their procedures, capabilities, and limitations,

are important considerations. Rules of engagement (ROE), disposition of air and missile defense (AMD) weapons, fire support plans, and procedures for identification of US and multinational aircraft, are also important items to consider. The following broad principles of planning are essential to effective airspace control: interoperability, mass and timing, unity of effort, integrated planning cycles, and a plan for the full spectrum of communications from no degradation to full degradation.

Integration of Airspace Control and Civil Air Traffic Control Operations

The ACP should provide procedures to fully integrate the resources of the military and civil air traffic control (ATC) facilities and personnel responsible for terminal-area airspace control or en route ATC, when required. Civil ATC integration may require detailed negotiations through the Department of State or national and local ATC agencies.

Integration of Airspace Control and Air and Missile Defense Operations

ROE and procedures must give AMD forces freedom to engage manned and unmanned hostile aircraft and missiles. However, procedures must be established in the ACP and promulgated in the ACO to identify friendly aircraft, prevent delays in offensive operations, and mitigate situations which could cause unintended engagements against friendly, civil, or neutral aircraft.

Airspace Integration and Joint Fires

Liaison elements are vital when integrating air and surface elements in close proximity. Close coordination is required to integrate and deconflict airspace use with the employment of joint fires. ACMs are employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces.

Methods of Airspace Control

Methods of airspace control range from positive control of all air assets in an airspace control area to procedural control of all such assets, or any combination of the two. **Positive control** requires sensors to locate and identify airspace users in real-time and communications, to maintain continuous contact with the user. **Procedural control** relies on comprehensive air defense identification procedures and ROE; voice and digital communications between aircraft and airspace control elements; ACMs, such as low-level transit routes, minimum-risk routes, coordinating altitude, coordination level, restricted

operations zones (ROZs), standard use Army aircraft flight routes, and high-density airspace control zones (HIDACZs); aircraft identification maneuvers; and FSCMs such as restrictive fire areas and no-fire areas.

Enemy Air Engagement Operations

Engaging enemy aircraft with friendly air, land, and maritime assets must be fully coordinated to optimize all aspects of friendly combat power. Combining fighter engagement zone and missile engagement zone operations presents the enemy with the challenge of defending, against two entirely different weapon systems, greatly decreasing enemy survivability.

Multinational Integration

Coordination between multinational forces is essential to achieve mission success and avoid unintended engagement of friendly, civil, and neutral aircraft. Multinational aircraft involved in the operation should appear on the daily ATO to help ensure deconfliction and effective airspace control.

Unmanned Aircraft

The established principles of airspace control used in manned flight operations will normally apply to unmanned aircraft (UA) operations. However, UA may be difficult to visually acquire and do not always provide a clear radar or electronic signature, presenting a potential hazard to other aircraft. Therefore, UA operations require special considerations in terms of airspace control and usage.

Missiles

Procedural ACMs for missiles may include ROZs for launch and target locations, missile flight path corridors that include specified altitudes, and position area hazard/target area hazard locations for an Army Tactical Missile System.

High-Density Airspace Control Zone

A HIDACZ may be established when planned operations involve a concentrated and complex mix of airspace users and weapons supporting a ground or amphibious operation. Access to a HIDACZ is normally controlled by the maneuver commander.

Airspace Control in Maritime Operations

In joint maritime operations, specific control and defensive measures may differ from those used in a land-based operation. The joint force maritime component commander may be designated the control authority for a specific airspace control area or sector for the accomplishment of a specific mission.

Airspace Control Execution by Phase

Phase 0–Shape

The shape phase is inclusive of normal and routine military airspace activities to deter potential adversaries and ensure or solidify relationships with friends and allies. The host nation (HN) retains control of the airspace and joint forces primarily use existing international or HN aeronautical information publications for airspace procedures or guidelines; airspace and navigation services are the sovereign right and responsibility of the HN.

Phase I–Deter

The deter phase is normally a demonstration of joint force capabilities and resolve to deter undesirable adversary action. Specific airspace actions may include developing the finalized ACP and airspace database build for ACO publication; obtaining initial over flight and airspace permission; and assigning joint force airspace liaison personnel to Department of State, US embassies, multinational, or HN organizations, to coordinate airspace requirements for subsequent phases of the operation.

Phase II–Seize the Initiative

Transition to phase II may be accomplished on the JFC's initiative or in response to an enemy attack. The ACP should contain instructions to transition from peacetime to combat in simple, clear steps. At the outset of phase II combat operations, every effort should be made to exclude civil aviation operations from the affected JOA.

Phase III–Dominate

Phase III includes the full employment of joint force capabilities and continues the appropriate sequencing of forces into the operational area as quickly as possible. Integration of fires and aircraft is a critical part of phase III airspace control planning.

Phase IV–Stabilize

Phase IV operations are typically characterized by a shift in focus from sustained combat operations to stability operations. Civilian officials may lead operations during part or all of this phase, but the JFC typically will provide significant supporting capabilities and activities. A key ACA requirement is to plan for the HN's successful resumption of airspace control, including establishing HN capabilities, if required.

Phase V–Enable Civil Authority

This phase is predominantly characterized by joint force support to legitimate civil governance in the operational

area. Based on the level of required support, airspace control personnel may be required to provide Service-specific controllers, liaisons, and trainers to support HN authorities.

CONCLUSION

This publication provides doctrine to plan, execute, and assess airspace control during joint operations across the range of military operations.

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CHAPTER I INTRODUCTION

“Gulf lesson one is the value of air power...we must retain combat superiority in the skies.”

President George H. W. Bush
29 May 1991

1. General

a. This joint publication (JP) prescribes doctrine for airspace control in the operational area. The prescribed doctrine is broadly stated to fit a wide range of situations **requiring some degree of military control of airspace**. The degree of control may vary based on international agreements, enemy and friendly force structures and deployments, the commander’s concept of operations (CONOPS), and operational environments in foreign countries, on the high seas, and within amphibious objective areas (AOAs).

b. In today’s complex and dynamic airspace environment, civil use of airspace will likely occur concurrently with military operations. Commercial aircraft, nongovernmental organizations, and relief agencies may require use of airspace to support their associated operations. With such demand, integration and information sharing is key to successful planning and execution. Along with increased demand for use of airspace, the proliferation of military integrated air defense systems, including capabilities against enemy missiles and unmanned aircraft systems (UASs) further complicates airspace control requirements. Indirect fire systems are also airspace users and today range higher and farther than ever before. These increased user demands require an integrated airspace control system (ACS) that facilitates mission accomplishment while reducing the possibility of unintended engagements against friendly, civil, and neutral aircraft.

c. **This publication outlines fundamental principles, relationships, and broad operational-level guidelines.** It is not intended to limit commanders’ authority over and responsibility for their forces, but is intended to provide the basic framework upon which to build an ACS for an operational area.

d. When joint air operations are complex and/or large in scope, the joint force commander (JFC) will normally designate a joint force air component commander (JFACC). In addition to a JFACC, the JFC also normally designates an area air defense commander (AADC) and an airspace control authority (ACA) and may assign those roles to the same individual designated to be the JFACC because the three functions are so integral to one another. The ACA plans, coordinates, and develops airspace control procedures and operates the ACS. The AADC, in coordination with the ACA, plans and executes air and missile defense (AMD) operations. When the situation dictates, the JFC may designate a separate ACA and/or AADC. **In those circumstances where separate commanders are required and designated, close coordination is essential for unity of effort, prevention of unintended engagements against friendly, civil, and neutral aircraft, and integration of joint air operations.**

e. The ACA develops an airspace control plan (ACP) for JFC approval. The plan should take into consideration the likelihood of multinational operations, as well as the need to develop policies and procedures that foster compatibility and interoperability of support systems and methods to accommodate potential civil aviation activities. US forces participating in multinational operations may be subject to command arrangements and authorities established in international agreements. The ACP should be closely integrated with the JFC-approved area air defense plan (AADP) developed by the AADC. Collection of lessons learned information throughout the development of the ACP will assist ACP development for future operations.

2. Airspace Control

a. Airspace control increases operational effectiveness by promoting the safe, efficient, and flexible use of airspace while minimizing restraints on airspace users. Airspace control includes coordinating, integrating, and regulating airspace to increase operational effectiveness. Effective airspace control reduces the risk of unintended engagements against friendly, civil, and neutral aircraft, enhances air defense operations, and permits greater flexibility of joint operations. Airspace control operations may begin prior to (and continue after) combat operations and may transition through varying degrees of civil and military authority. The JFC defines the relationship between the ACA and component commanders. The ACA has authority to approve, amend, or disapprove airspace requests for the designated operational area in accordance with JFC guidance and objectives. The ACA does not have the authority to approve, disapprove, or deny combat operations. That authority is only vested in operational commanders. If the ACA and an affected component commander are unable to agree on an airspace issue, the issue will be referred to the JFC for resolution.

b. Airspace control is essential to overall military effectiveness and in achieving JFC objectives. Given the speed, range, and physical characteristics of air operations, airspace coordinating measures (ACMs) are integrated into operations to deconflict airspace users and decrease the potential for unintended engagements against friendly, civil, and neutral aircraft. Available technical capabilities such as surveillance radars, navigation aids, and communications between airspace users and airspace control, AMD, and air traffic control (ATC) agencies often determine the required ACMs. In general, limited or lower technical capabilities result in decreased airspace efficiency potential. Conversely, higher technical capabilities result in increased airspace efficiency potential. Airspace control is extremely dynamic and situational, and it needs to be flexible and responsive enough to accommodate users with varied technical capabilities and to mitigate technical failure or adversary action in order to optimize airspace use. Airspace control provides the JFC operational flexibility to employ forces effectively. Fundamental considerations are shown in Figure I-1.

c. Airspace control at the tactical level is provided by the interaction between airspace users and airspace control elements (e.g., Air Force control and reporting center, Marine tactical air operations center, Air Force Airborne Warning and Control System [AWACS], Navy tactical air control center and E-2C, Marine direct air support center, Air Force air support operations center, Army air defense airspace management/brigade aviation element, and military ATC units, and US civil and host nation [HN] ATC activities). **Airspace management supports airspace control through the coordination, integration,**

Fundamental Considerations of Airspace Control

- The need for each joint force component to operate a variety of aircraft and weapons systems; high and low speed, rotary-wing, tiltrotor, fixed-wing, manned, unmanned, and surface-based.
- The need for each component to use the airspace with maximum freedom consistent with the degree of risk operationally acceptable to the joint force commander.
- The need for airspace control activities to be performed in congruence with air defense operations to integrate and synchronize surface-to-air defense weapons and air defense aircraft for maximum effectiveness.
- The need to discriminate quickly and effectively between friendly, neutral, and enemy air and missile operations, vehicles, and personnel.
- The need for the airspace control system to support complex and high-density air operations to meet joint force commander requirements.
- The need for close coordination and integration of surface force operations, supporting fires, air operations, air defense operations, special operations, and airspace control activities.
- The need to accommodate US, host-nation, and multinational airspace control activities.
- The need to recognize the saturation levels and limitations of the airspace control system.
- The need for temporary airspace coordinating measures and other coordination measures to allow subordinate commanders maximum freedom of action.
- The need to standardize voice and data communications and language requirements to minimize differences in interpretation, translation, or application of airspace control procedures during multinational operations.

Figure 1-1. Fundamental Considerations of Airspace Control

and regulation of airspace users by airspace control elements within airspace of defined dimensions.

For details on airspace control elements see Field Manual (FM) 3-52.2/Navy Tactics, Techniques, and Procedures (NTTP) 3-56.2/Air Force Tactics, Techniques, and Procedures (AFTTP) 3-2.17, Multi-Service Tactics, Techniques, and Procedures for The Theater Air Ground System; FM 3-52.3/Marine Corps Reference Publication (MCRP) 3-25A/NTTP 3-56.3/AFTTP 3-2.23, Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control; FM 3-01.15/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System; and FM 3-52.1/AFTTP 3-2.78, Multi-Service Tactics, Techniques and Procedures for Airspace Control.

3. Basic Principles

a. **Airspace is a crucial part of the operational environment** and is used by all components of the joint and multinational forces. A high concentration of friendly surface, sub-surface, and air-launched weapon systems must share airspace without unnecessarily hindering the application of combat power in accordance with the JFC's intent or exceeding acceptable operational risks. **The primary goal of airspace control is to enhance effectiveness of joint and multinational air operations.** Basic principles of airspace control are listed in Figure I-2 and described below.

b. Two major reasons for close coordination between airspace control, ATC, and AMD elements are to **reduce the risk of unintended engagements against friendly, civil, and neutral aircraft, and increase the effectiveness of air defense.** Identification requirements for airspace control must be compatible with those for AMD. Airspace control, air defense,

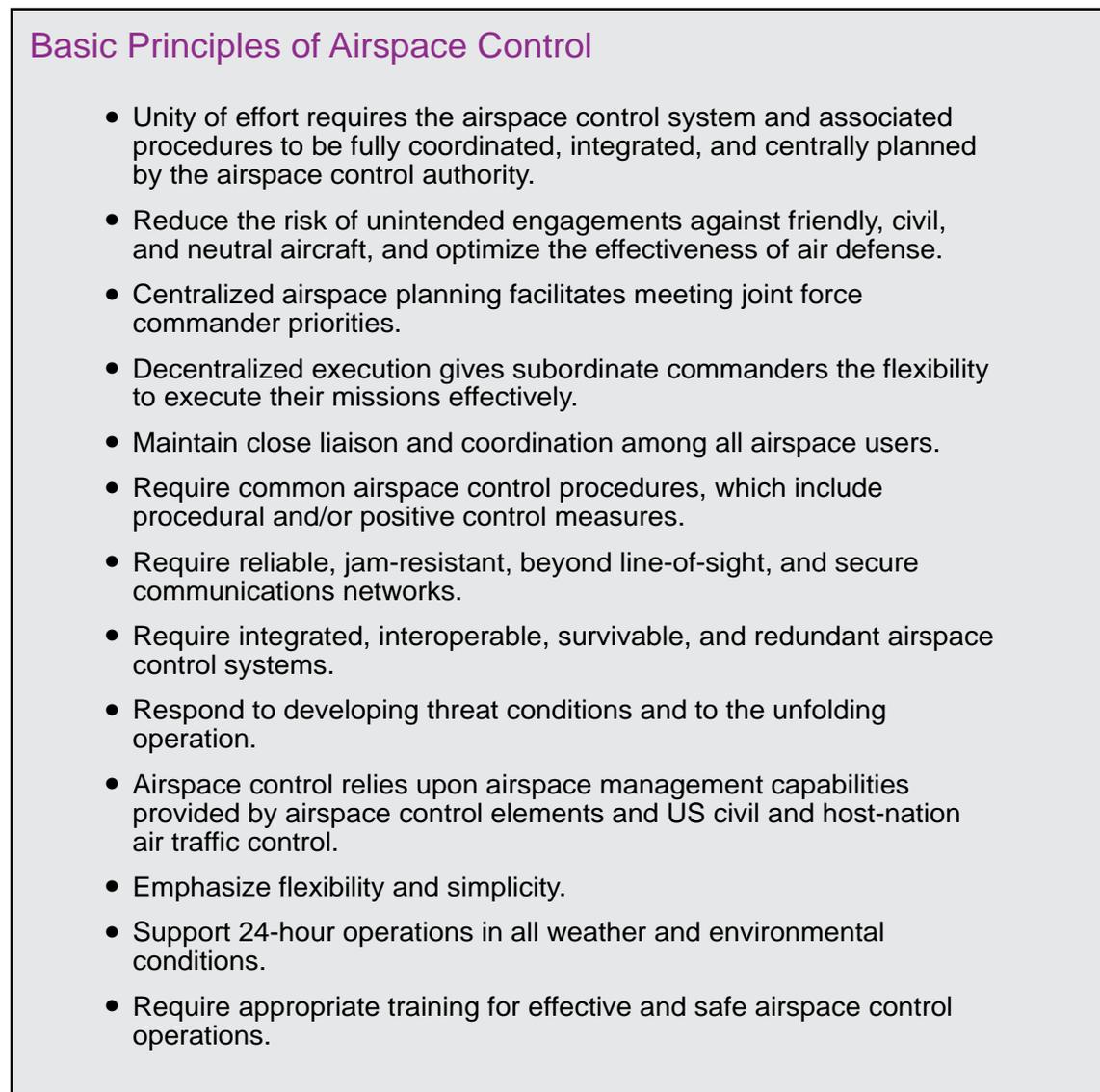


Figure I-2. Basic Principles of Airspace Control

ATC, supporting procedures, equipment, and terminology need to be compatible, mutually supporting, integrated, and interoperable.

c. The designated ACA maintains situational awareness of the airspace environment, while focusing on the designated operational area and JFC mission requirements, and is best suited to balance competing airspace needs against the requirements for the operation. **Centralized airspace planning** by the ACA facilitates meeting JFC priorities with a fully coordinated and integrated ACS. The ACS should integrate multinational partners for successful mission planning. **Decentralized execution** allows subordinate commanders to take the initiative and increase airspace control effectiveness through real-time airspace integration during execution. The ACS and procedures must be flexible enough to permit decentralized execution to the extent warranted by the operational environment. In those situations where there is one theater-wide ACA supporting more than one JFC (more than one joint operations area [JOA]), separate and distinct ACPs and airspace control orders (ACOs) should be developed and approved by the respective JFC.

d. Close liaison and coordination among all airspace users inside and outside the JOA is necessary to promote timely and accurate information flow to airspace managers. Effective liaison and coordination directly relate to the success of the campaign or operation.

e. Airspace control procedures provide flexibility through an effective combination of positive and procedural control measures. The ACS structure encourages close coordination between joint force components to allow rapid concentration of combat power. As operations progress through different phases, the ACS adapts to changing requirements and priorities.

(1) **Procedural control relies on common procedures**, designated airspace, and promulgated instructions by an airspace control element to deconflict and activate air traffic control measures (ATCMs), ACMs, fire support coordination measures (FSCMs), and air defense measures (ADMs). Procedural control activates the airspace by defined volume and time through standard ACMs or updates to weapons control status. This serves to deconflict the defined airspace and aircraft from other airspace users. When appropriate communications exist, an airspace control element can provide procedural control instructions in real time to increase operational flexibility for airspace users. Procedural control establishes the minimum common criteria and concepts for airspace control. **Procedural control provides effective airspace system capabilities for low density airspace situations and in areas that lack positive control coverage. Procedural control measures should be uncomplicated**, readily accessible to all forces, and disseminated in the ACP, ACO, and special instructions (SPINS) of the air tasking order (ATO), when appropriate. Use of these documents is essential for the planning and integration of manned and unmanned aircraft (UA) operations.

(2) **Positive control relies on surveillance, accurate identification, and effective communications between ACA designated airspace control elements and all airspace users.** It is normally conducted by airspace control elements equipped with radar; identification, friend or foe (IFF) interrogators and receivers; beacons; track processing computers; digital data links; and communications equipment. The minimum requirements

for surveillance, identification, and communications equipment will vary in each theater, but are likely to be driven by a combination of military and civil aviation regulations and the level of risk the JFC is willing to accept. **Positive control requires two primary conditions: the means to locate and identify airspace users and the ability to maintain continuous communications with them for required control instructions.** Positive control procedures must include provisions for transition to procedural control if positive control systems are degraded or become unavailable. Those procedures must also take into account differences between civil and military communications and surveillance systems.

(3) **There is a continuum of efficiency, level of effort, resources required, and risk between procedural and positive control.** Uncontrolled airspace exerts a small drain on resources, but increases risk. Standing ACMs, such as a restricted operations zone (ROZ), incrementally increase control and resources required, but do not provide the best mitigation for risk. Full military or civil positive control provides the best mitigation for risk, but has a large cost in resources. This comparison assumes a constant volume of air traffic. Ideally, the entire airspace control area would be under positive control with radar and communication coverage. However, limited resources or other factors, such as terrain and lack of integrated technology, may make this goal unrealistic. Airspace planners should understand the JFC's risk guidance, and determine the areas where the need for efficiency is highest, and establish the appropriate combination of positive and/or procedural control in those areas first. In areas where positive control isn't feasible, standing ACMs should establish the minimum standard for airspace control. These standing measures form a crucial backup in the event positive control capability is diminished. Figure I-3 depicts these relationships.

f. The ACS should have a **reliable, integrated, jam-resistant, and secure voice and data communications network.** Emphasis should be placed on simple, flexible airspace management procedures that require minimal communications. Airspace management should account for possible degradation in communications capabilities. In this manner, flexibility and responsiveness are preserved. Coordinated and detailed planning is required to ensure that communications systems and procedures are compatible among all airspace users and airspace control elements.

g. **Airspace control, air defense, and ATC assets comprising the ACS need to be integrated, interoperable, survivable, and redundant** because they are likely to be prime targets for an attacker.

h. The structure of the ACS needs to be **responsive to developing threats and to the unfolding operation.** The design, responsiveness, and procedures of the ACS should support the rapid massing of combat power.

i. **Airspace control relies upon airspace management capabilities** provided by airspace control elements (airspace control, air defense, and military ATC) and US civil and HN ATC.

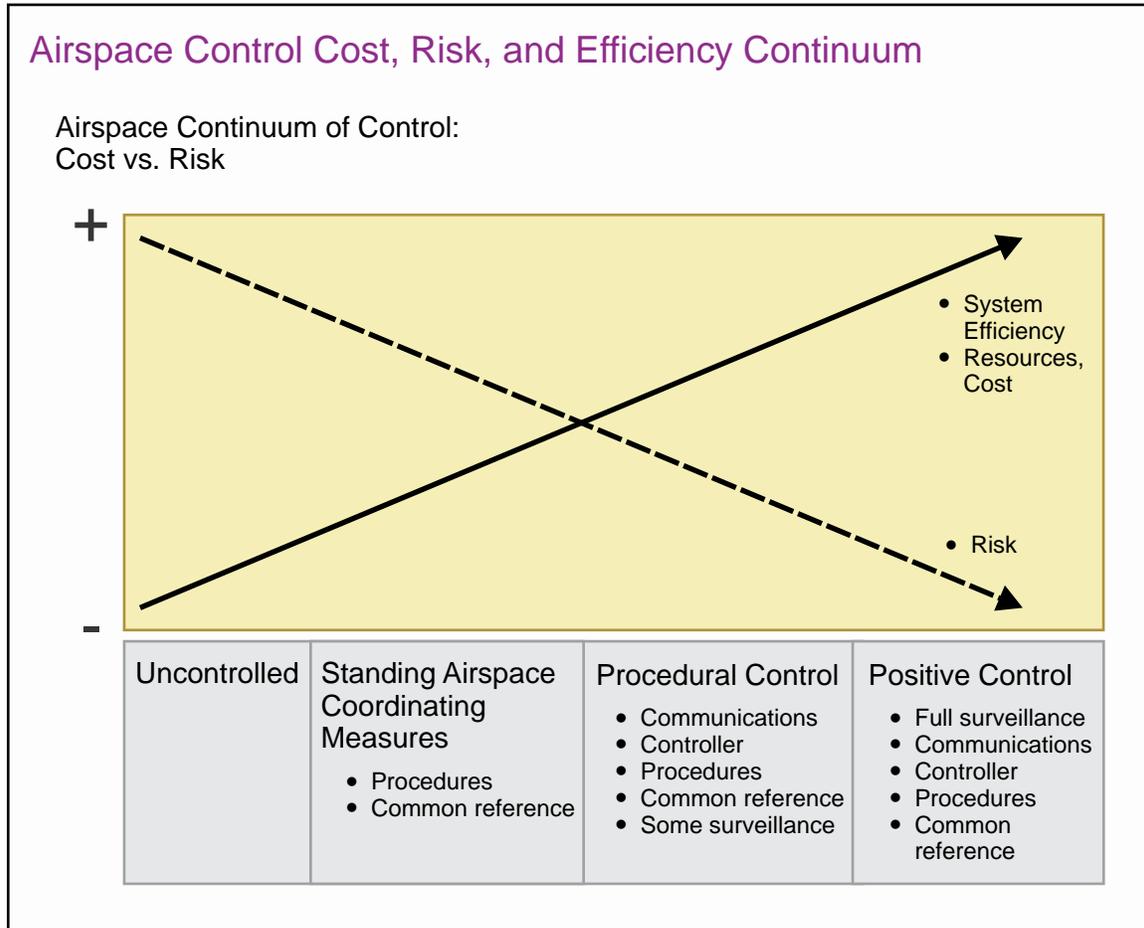


Figure I-3. Airspace Control Cost, Risk, and Efficiency Continuum

j. The ACS is generally based on compromise between a wide variety of conflicting demands for airspace use. **Flexibility and simplicity** must be emphasized throughout to maximize the effectiveness of forces operating within the system. This flexibility should include the ability to support a civil air traffic structure where no HN ATC capability exists.

k. The ACS needs to **support 24-hour operations in all weather and environmental conditions.**

l. **Effective and safe operations in today's complex airspace require appropriate training for joint airspace users and joint ACS personnel.** Core airspace training is a Service component responsibility with theater-specific training as required. To provide a realistic training environment, ACS components should be exercised as an overall system rather than as separate entities. Exercises and simulations involving multiple agencies and users across the range of military operations provide complexity and realism to effectively train airspace agencies and users. Joint, multinational, other US Government departments and agencies, and international civil airspace elements should be incorporated whenever possible to validate emerging interoperability capabilities. Airspace control elements should establish procedural agreements and required communication links to ensure effective interagency coordination.

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CHAPTER II ORGANIZATION AND COORDINATION

“Generally, management of the many is the same as management of the few. It is a matter of organization.”

Sun Tzu, *The Art of War*

1. General

Consistent with the provisions of JP 1, *Doctrine for the Armed Forces of the United States*, a JFC has the authority to organize forces to accomplish the assigned mission based on the CONOPS. The organization of forces will depend on the mission assigned, the manner in which the mission is to be fulfilled, and the capabilities and strength of the component elements of the forces assigned. Consequently, the organizational form of the ACS may vary.

2. Organization

The organizational arrangements depicted in this chapter may apply to airspace control for joint forces. When circumstances dictate, appropriate modification may be prescribed by the JFC. The following descriptions of broad duties are central to effective airspace control. Understanding the roles of the JFC, the JFACC, other component commanders, the ACA, and the AADC is essential. Other key airspace control terms and their descriptions and definitions are addressed in Appendix C, “Coordination Measures,” or in the glossary.

a. **JFC.** The JFC is responsible for airspace control in the JOA. The ACP and ACO express how the airspace will be used to support mission accomplishment.

b. **JFACC.** The JFC will normally designate a JFACC and assign responsibilities. The JFACC plans, coordinates, and monitors joint air operations, and allocates and tasks joint air operations forces based on the JFC’s CONOPS and air apportionment decision. When the JFC designates a JFACC, the JFC also normally designates the JFACC as the AADC and ACA because the three functions are so integral to one another. When appropriate, the JFC may designate a separate AADC or ACA. In either case, the ACA plans, coordinates, and develops airspace control procedures and operates the ACS. The air operations directive (AOD) provides the JFACC’s guidance for each ATO and the successive planning steps. Furthermore, this document conveys the JFC’s guidance with respect to acceptable levels of risk, usually based on mission type orders. This gives the operational level planners the information they need to allocate sorties to meet JFC objectives within imposed risk constraints. When the situation dictates, the JFC may designate a separate AADC and/or ACA. In those joint operations where separate commanders are required and designated, close coordination is essential for unity of effort, prevention of friendly fire incidents, and deconfliction of joint air operations.

For additional details on the organization and functioning of a JFACC, see JP 3-30, Command and Control for Joint Air Operations.

c. **Component Commanders.** Component commanders advise the JFC on the employment of component forces and the direction and control of those forces. Each component commander plans and executes a portion of the total air effort and interacts with other components. **Subject to the authority of the JFC, each component commander within a joint force:**

(1) **Employs AMD weapons systems** in accordance with the rules of engagement (ROE), the AADP, and other operational guidance.

(2) **Coordinates, integrates, and deconflicts operations with other component commanders when appropriate.** Coordination for airspace control may be facilitated through collocation of key airspace control, AMD, and fire support coordination agencies. When collocation is not possible, such facilities need to be connected with appropriate secure communications, and liaison personnel should be exchanged. This coordination is especially important during the planning phases of an operation.

(3) **Forwards requests for coordination measures such as ACMs and FSCMs** in accordance with the ACP.

(4) **Develops detailed airspace control instructions, plans, and procedures** in accordance with JFC-approved ACP guidance.

(5) **Provides necessary facilities and personnel** for airspace control functions in assigned areas and identifies these facilities and personnel for inclusion in the ACP.

d. **ACA.** The ACA develops airspace control policies and procedures for all airspace users and airspace control elements. The ACA establishes an ACS based upon JFC and component commanders' requirements and integrates the ACS with the HN. The ACA coordinates and integrates airspace use under JFC authority. **The ACP is a JFC- approved directive for all joint force elements using the airspace to include manned and UA and indirect fires.** Implementation of the ACP begins with the distribution of the ACO, and is executed when components and users comply with the ACO as described in JP 3-30, *Command and Control for Joint Air Operations*. The ACP establishes the ACS, the control nodes, and airspace procedures. The ACO implements the ACP. ACA responsibilities are summarized in Figure II-1.

e. **AADC.** The AADC is responsible for defensive counterair (DCA) operations, which include both air and missile threats. The AADC identifies airspace control requirements to support DCA operations. These include airspace control and AMD agencies, ACMs, ADMs, and procedures for AMD operations conducted within the ACS.

3. Liaison Requirements

Liaison requirements will vary based upon the nature of the mission, size of the force, and various operation and mission variables; therefore, the proper identification of liaison requirements is a key planning and command and control (C2) consideration.

Airspace Control Authority Responsibilities

- Coordinate and integrate the airspace.
- Develop policies and procedures for coordinated airspace control required among units within the operational area.
- Establish an airspace control system that is responsive to the needs of the joint force commander, provide for integration of the airspace control system with that of the host nation, coordinate and deconflict user requirements, and if directed assist in establishing a civil air control structure.
- Develop the airspace control plan and, after joint force commander approval, distribute it throughout the operational area. Implement the airspace control plan through the airspace control order.
- Provide necessary facilities and personnel for airspace control functions in assigned areas and identify these facilities and personnel for inclusion in the airspace control plan.

Figure II-1. Airspace Control Authority Responsibilities

4. Airspace Control Plan

The ACP establishes procedures for the ACS in the operational area. An example of the topics that should be considered when developing an ACP is provided in Appendix A, “Airspace Control Plan Development Considerations.” **The JFC approves the ACP. To provide effective operational procedures, the ACP and AADP must be integrated with the JFC’s operation plan (OPLAN) and orders.** The ACP considers procedures and interfaces with the international or regional ATC systems necessary to effectively support air operations, augmenting forces and JFC objectives. Consequently, the ACP should be preplanned, to the degree possible, and be put in a simplified, understandable format. Because the airspace control area normally coincides with AMD boundaries, coordination between airspace control and area AMD operations is essential. Key factors to consider are listed in Figure II-2.

a. **The ACP should be coordinated with HN representatives** if appropriate and available.

b. Planning factors to be addressed when developing the ACP include: familiarity with the basic OPLAN or operation order (OPORD); combined with knowledge of HN and multinational considerations; consideration of lessons learned; understanding the operational and mission variables; familiarity with the capabilities and procedures of airspace control, AMD, and military and civil ATC agencies; and general locations of friendly, neutral, and enemy forces.

c. **The ACP needs to support an orderly transition between peacetime and combat operations.** Such a transition could occur during a period of increasing and/or decreasing tensions or suddenly without much warning.

Airspace Control Plan Considerations

- Procedures that include rules of engagement and disposition of air defense weapon systems, such as air defense fighters, air defense artillery, surface-to-air missiles, and air defense command and control operations.
- Limitations or adverse conditions in the joint operations area that may adversely affect the airspace control plan.
- Anticipated restricted areas based on initial deployment of friendly air, land, maritime, and special operations forces and bases.
- Existing air traffic control areas, base defense zones, controlled or uncontrolled airspace, and overflight of neutral nations.
- Mission profiles; combat radii; and identification, friend or foe (IFF), or other identification capability of aircraft that will operate in the operational area.
- Enemy air defense weapons capabilities and deployment.
- Electronic attack and deception capabilities.
- Emergency procedures for aircraft experiencing difficulties (including IFF problems).
- Procedures for day or night operations and for aircraft experiencing adverse weather.
- En route and terminal-area air traffic control procedures for aircraft transiting to and from the operational area.
- Procedures to support surge operations requiring high volumes of air traffic.
- Enemy offensive air capabilities. Additionally, the vulnerability of friendly aircraft to enemy surface-to-air missiles and the vulnerability of friendly surface-based air defenses to enemy long-range indirect fires are important planning and execution considerations.
- Procedures, routes, and restricted areas for air mobility assets performing direct combat support of forces, logistic resupply, aerial refueling, personnel recovery, or aeromedical evacuation.
- Civil air traffic corridors and procedures.
- Provisions for fire support coordination measures.

Figure II-2. Airspace Control Plan Considerations

d. **The ACP specifies coordination measures such as ACMs, ADMs, and FSCMs to be used in the operational area and how these measures will be distributed and implemented.** The ACP should provide guidance on what FSCMs will be placed in the ACO.

The ACP should also provide guidance on component-unique coordination measures, terms, or graphics that may be included in the ACO.

e. The ACP provides procedures to fully integrate the resources of military ATC facilities and personnel responsible for terminal and en route ATC. **ATC facilities are interfaced and linked with ACS communications to form a system that fosters the safe and efficient flow of air traffic.**

f. **The AADP includes detailed engagement procedures.** Airspace control and area AMD operations should have plans for operations in a degraded communications environment. Detailed engagement procedures and decentralized weapons control procedures (as applied to AMD) are key to operations in a degraded environment. **Integration of AMD forces within the overall ACP is critical to effective airspace control.** The geographic arrangement of weapons and the location of specific types of air defense operations, as well as specific procedures for identification of aircraft, are critical factors to include in the ACP.

g. The ACP and AADP are distributed to all forces providing intertheater or intratheater air support. Not understanding or following the ACP and AADP may result in hazardous air traffic situations, cause confusion between aircraft and control agencies, and increase the risk of friendly fire and unintended engagements against civil and neutral aircraft.

5. Airspace Control Order

The ACP provides general guidance for the control of the airspace, but the ACO implements specific control procedures for established time periods. The ACO is an order that provides the details of the approved requests for coordination measures such as ACMs, ADMs, and FSCMs. It is published either as part of the ATO or as a separate document. **The ACO defines and establishes airspace for military operations as coordinated by the ACA.** It notifies all agencies of the effective time of activation and the composite structure of the airspace to be used. The ACO may include coordination measures such as base defense zones, coordinated fire lines, drop zones, pickup zones, restricted areas, carrier control zones, and other areas. A change to the ACO should be posted and distributed in a timely manner to all users for effective use of airspace whenever coordination measures are created, modified, or canceled. Timely ACO change alerts and promulgation of ACO changes to all airspace users and airspace control elements, to include multinational forces, is essential to avoid friendly fire incidents and unintended engagements against civil and neutral aircraft, and to increase operational effectiveness.

6. Airspace Control Order Development

a. Normally, the ACO is published and distributed daily and contains coordination measures, procedural control instructions, and the airspace required to support the corresponding ATO. The ACO activates and deactivates procedural control measures and updates positive control measures.

b. Procedures to develop and update the ACO are included in the ACP. Normally, component commanders consolidate, deconflict, and forward their airspace requests to the ACA by a specified time for further consolidation with other inputs. All inputs are

integrated and conflicts among the components are resolved. Planners should be aware that not all information that goes into the ACO is the result of a request for airspace. Guidance should be given, depending on the level and the number of forces in the operational area, on what other information should be included, (e.g., FSCMs and other coordination measures).

c. The JFC may elect to delegate specific authority for airspace control to the component commanders through ACP guidelines. The JFC may also elect to task the component commanders to generate individual ACOs for their assigned sectors. Regardless, the ACA is tasked with providing continuity along sector boundaries and ensuring integration of each sector authority's ACO within the ACP guidelines.

d. The ACA remains responsible for airspace control for the entire operational area. The decision to develop a single ACO or multiple ACOs will be situation-dependent. Normally, a single ACO is used.

7. The Joint Air Tasking Cycle

a. The joint air tasking process provides for the effective and efficient employment of joint air capabilities and forces. This process provides an iterative, cyclic process to plan, apportion, allocate, coordinate, task, and execute joint air missions and sorties within the guidance of the JFC. The process accommodates changing tactical situations or JFC guidance, as well as requests for support from other component commanders. **The joint air tasking process is a systematic cycle that focuses joint air efforts on supporting operational requirements.** Much of the day-to-day tasking cycle is conducted through an interrelated series of information exchanges and active involvement in plan development, target development, air execution, and assessment, which provide a means of requesting and scheduling joint air missions.

b. **Planners must develop airspace control and AMD instructions in sufficient detail to allow components to plan and execute all air missions listed in the ATO.** These directions enable combat operations without undue restrictions, balancing combat effectiveness with the safe, orderly, and expeditious use of airspace. Instructions provide for quick coordination of task assignment and reassignment, direct aircraft identification, engagement procedures, and ROE appropriate to the nature of the threat. These instructions should also consider the volume of friendly air traffic, friendly air defense requirements, IFF technology, weather, and adversary capabilities. Instructions are contained in the SPINS and in the ACO, and are updated as frequently as required. **The ATO, ACO, AOD, and SPINS provide operational and tactical direction at appropriate levels of detail.**

c. The ATO is the OPORD or mission assignment for all aircraft missions flown under the control of the JFACC in the operational area and shows all missions operating in the operational area during the effective time period. Other air missions not under the control of the JFACC may be added to the ATO to provide visibility for overall coordination and deconfliction. A timely ATO is critical—joint force components conduct their planning and operations based on a timely, executable ATO, and are dependent on its information.

d. In some theaters, numerous airspace procedures and airspace usages are published in the SPINS. The SPINS include a section on airspace procedures. Other SPINS sections will

include tanker procedures and missile procedures, as required. The SPINS may include ROE and combat identification criteria for AMD along with any additional guidance/directives/information for weapons system operators and/or aircrews such as HN restrictions, base defense zone procedures, personnel recovery procedures, and special weapons systems control procedures. SPINS are published as baseline SPINS, weekly SPINS, and daily SPINS.

For further discussion of the joint air tasking cycle, see JP 3-30, Command and Control for Joint Air Operations.

8. Communications and Security Considerations

a. **ACSs should be joint, interoperable, survivable, sustainable, and redundant.** The ACS should be jam-resistant with secure C2 networks. The ACS should allow users to maintain situational awareness and effectively respond to evolving enemy situation and friendly air operations. Timely integration of relevant sensor data and intelligence, surveillance, and reconnaissance information; exchanged between airspace control elements and C2 nodes; develops the common operational picture (COP) containing crucial situational awareness for airspace agencies, users, and decisionmakers.

b. The purpose of security is to never permit the enemy to acquire an unexpected advantage. Secure ACSs, including sensors, communications, data processing, and common operating databases, are crucial to effective airspace control capabilities. Cybersecurity programs such as communications security, physical security, emissions security, as well as defensive cyberspace operations are methods to protect ACSs and information. **Due to the US military's dependency on and the general vulnerability of electronic information and its supporting systems, cybersecurity and defensive cyberspace operations are essential to airspace control.** Considerations for operations security (OPSEC) and information sharing with partner nations must be analyzed and applied when developing cybersecurity and C2 communication policies and procedures.

c. ACS sensors and radio communications are susceptible to electronic and cyberspace attack and interference from transmitters operating in the same segment of the electromagnetic spectrum. Such attacks and interference can result in decreased situational awareness, loss of air picture, and degraded communications between airspace control elements and airspace users creating potential safety of flight situations and/or friendly fire incidents. Sources of interference should be identified and eliminated or mitigated if possible. If not possible, alternate sensors and means of communication should be used. Sensor and communications degradation and outage procedures should be established and exercised. Airspace control planning and execution must be integrated with spectrum management throughout all phases of operations.

For more information on spectrum management, see JP 6-01, Joint Electromagnetic Spectrum Management Operations.

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CHAPTER III

AIRSPACE CONTROL PLANNING CONSIDERATIONS

"I stick to one basic principle, get control of the air situation before you try anything else."

General George C. Kenney
Commander, Allied Air Forces, Southwest Pacific Theater, 1943

1. Airspace Considerations by Phase

a. **Phasing may be used to modify the prioritization of airspace control missions and priorities for operations.** Phasing is a useful tool to communicate the CONOPS and the shifting priorities between ongoing airspace operations. Airspace planners should consider that not all operations will transition smoothly between phases. Depending on the nature of the operation, national objectives, and JFC intent, operations may cease prior to the beginning of a subsequent phase. It is of the utmost importance to remember that the phasing construct is just a model to start planning efforts. **Each and every conflict is different and will not resemble the model at different points in time.**

For more details on phasing, see JP 3-0, Joint Operations, and JP 5-0, Joint Operation Planning.

b. Transferring ACA from civil to military control, adapting the ACS to JFC needs during each phase, and eventually returning it to civil authority are complex tasks requiring joint military, diplomatic, and interagency efforts. Since a crisis may occur unexpectedly, airspace control activities should be a part of deliberate and crisis action planning from the beginning. For instance, moving C2 and airspace control equipment is a time-phased force and deployment data consideration. Beyond rapidly deployable airspace control elements (e.g., AWACS, E-2C), much of this equipment may deploy (or redeploy) late in the operation due to intertheater airlift (or other lift) limitations. A dynamic plan from the beginning is required to ensure critical airspace control capability.

c. During joint operations, the likely mix of military and commercial air traffic activity during various phases may make airspace control more complex. In these situations, the HN may maintain control of its sovereign airspace, giving the JFC and ACA a less direct voice in the conduct of airspace control for continuing JFC operations. The tasks and responsibilities of ACA may play a role in the support of strategic and operational partnerships as part of theater security cooperation. Figure III-1 depicts notional ACA and the differing priorities and intent between civil and military airspace procedures.

d. Noncombat activities across the range of military operations, such as disaster relief or other support to government activities, share many of the same characteristics of phase IV or V activities. For instance, a disaster may destroy a nation's airspace control capability and the US Government may elect to provide assistance until the capability can be restored. The International Civil Aviation Organization (ICAO) has guidelines for airspace practices in the event of a disaster or significant noncombat events, and these should be referenced together

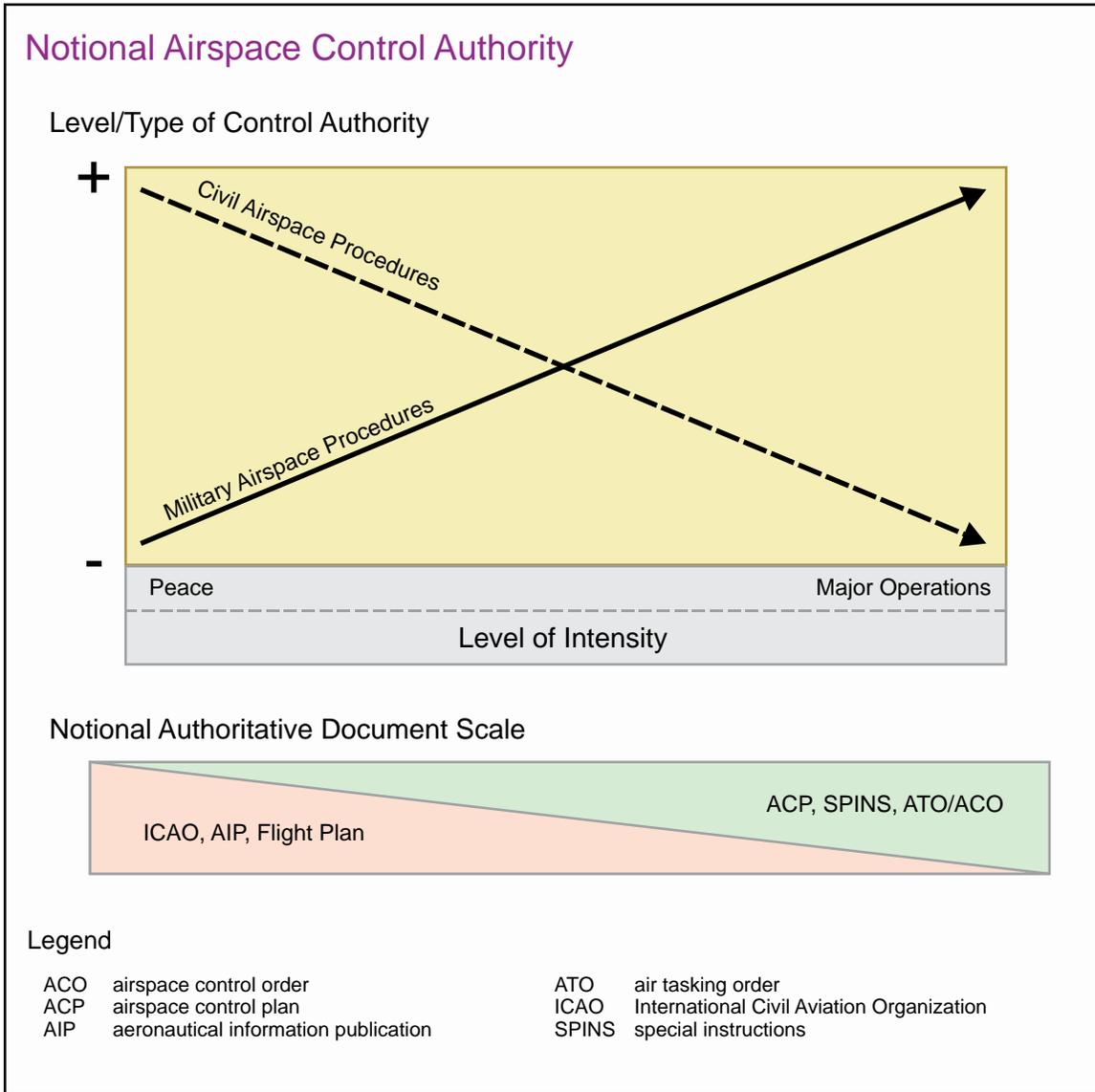


Figure III-1. Notional Airspace Control Authority

with existing HN procedures. Coordination with the HN; determination of authorities; interfacing with joint, interagency, and multinational organizations; providing service; conducting search and rescue operations for civil and military personnel; and deconflicting military and civil traffic are all applicable to operations other than combat.

e. Conditions may arise that require military operations within the US borders to support homeland defense or defense support of civil authorities (DSCA) activities. In such cases, military forces will be made available to United States Northern Command and United States Pacific Command, as required. Special considerations will likely apply due to the unique nature of homeland defense and DSCA and the requirements for Department of Defense (DOD)-wide and interagency coordination. For example, Operation NOBLE EAGLE, the homeland air defense operations launched by North American Aerospace Defense Command after the attacks of 11 September 2001, and military support operations after Hurricane

Katrina, demonstrated the need for a clear understanding of responsibilities and effective coordination between civil ATC and military airspace control elements during homeland defense or DSCA operations. Homeland airspace control considerations are discussed in JP 3-27, *Homeland Defense*, JP 3-28, *Defense Support of Civil Authorities*, and the Federal Aviation Administration's (FAA's), *Airspace Management Plan for Disasters*.

2. Airspace Control Risk Considerations

Risk is a fundamental consideration of airspace control and the assumption of risk is a command responsibility. Joint doctrine recognizes the need for each Service and functional component to use the airspace with maximum availability, consistent with the JFC acceptable level of risk. **The JFC's acceptable level of risk for all airspace users (including fires) should be clearly delineated in the ACP.** Definitions of high, moderate, and low risk vary from theater to theater based on the geographic combatant commander's guidance. In general terms, high risk prioritizes mission accomplishment over the preservation of resources; moderate risk seeks to balance mission accomplishment with potential resource losses; and low risk prioritizes the preservation of resources. Components must incorporate the acceptable level of risk during mission planning, development, and execution. Airspace control must be flexible enough to adjust to changes, such as changes to the volume of airspace users, or to the commander's risk guidance. For example, the ACP should identify areas where high volumes of airspace users are anticipated and project the need for enhanced airspace control capability. If enhanced airspace control capability is not an option, commanders must accept a higher risk or direct measures to reduce the volume of users to an acceptable level. Also, commanders may accept different levels of risk based on the systems involved. For example, a commander may direct that a higher level of risk be accepted for possible friendly fire incidents between indirect fires and some-or-all UA, than between indirect fires and manned aircraft.

3. Planning for Airspace Control

Each operational area will have specific operational requirements for airspace control. These requirements should be determined as early as possible and incorporated in the overall joint force planning effort. Political constraints and national and military ACSs, including their procedures, capabilities, and limitations, are important considerations. ROE, disposition of AMD weapons, fire support plans, and procedures for identification of US and multinational aircraft, are also important items to consider. **Every joint/multinational force is different and the forces assigned may have specific operational requirements for airspace.** The following broad principles of planning (see Figure III-2) are essential to effective airspace control:

a. **Interoperability.** Airspace control should be exercised in the joint and multinational environments during peacetime and in conflict. Planning for airspace control includes considerations for interoperability of equipment, as well as personnel and terminology.

b. **Mass and Timing.** Planning considerations should include volume of air operations and types of missions (e.g., air refueling, direct and indirect fires, AMD), along with timing constraints to ensure correct coordination measures are established to meet mission objectives.

Principles for Planning Airspace Control for Military Operations

- Interoperability
- Mass and Timing
- Unity of Effort
- Integrated Planning Cycles
- Degraded Operations

Figure III-2. Principles for Planning Airspace Control for Military Operations

c. **Unity of Effort.** Liaison requirements, especially between joint force components and multinational forces, should be identified and exercised prior to hostilities. Representatives from different components, multinational forces, and other US Government departments and agencies, need to integrate information flow throughout the system and provide expertise to the designated ACA.

d. **Integrated Planning Cycles.** The airspace planning cycle should be integrated with the overall planning cycle for the joint operation or campaign. Once input from all organizations involved in the operation is consolidated, the final ACP is devised and disseminated to users of the ACO. The ACP can be added as an appendix to the operations annex to the joint force OPLAN or OPORD.

e. **Degraded Operations.** Plans should anticipate the effects of electronic warfare (EW), combat losses, cyberspace operations, and communications degradation on system operations. An effective ACS needs to plan for the full spectrum of communications from no degradation to full degradation and should consider degradation due to changing environmental conditions.

4. Integration of Airspace Control and Civil Air Traffic Control Operations

Integration of airspace control, AMD, and military and civil ATC is vital to successful joint/multinational air operations. **The ACP should provide procedures to fully integrate the resources of the military and civil ATC facilities and personnel responsible for terminal-area airspace control or en route ATC, when required.** Civil ATC integration may require detailed negotiations through the Department of State or national and local ATC agencies. All ATC elements or their liaisons should be involved from the outset in planning and executing airspace management and should ensure that airspace requirements are coordinated with, and approved by, appropriate agencies. As required, ATC elements may participate in the development and integration of HN airspace infrastructure. ATC personnel may also provide planning, terminal, forward-area support, and flight information services to aviation assets conducting nation assistance.

5. Integration of Airspace Control and Air and Missile Defense Operations

Integration of airspace control and AMD is also vital to successful joint/multinational air operations.

a. Prioritization and integration of airspace control and AMD activities is essential. Airspace control procedures will be used to assist in aircraft identification, facilitate engagement of enemy aircraft, and provide safe passage of friendly aircraft.

b. **ROE and procedures must give AMD forces freedom to engage manned and unmanned hostile aircraft and missiles.** However, procedures must be established in the ACP and promulgated in the ACO to identify friendly aircraft, prevent delays in offensive operations, and mitigate situations which could cause unintended engagements against friendly, civil, or neutral aircraft. Procedures should be simple to execute for both aircrews and surface air defense personnel and may include visual, electronic, geographic, and/or maneuver means for sorting friend from foe. Air defense operations should not unnecessarily delay air operations by creating overly complicated or lengthy air route structures. ACMs should not unduly restrain surface-to-air weapons. Airspace control procedures objectives are shown in Figure III-3.

c. **AMD forces and systems are vulnerable to massed attacks across narrow frontages, therefore a flexible and adaptable ACP with well thought out airspace control procedures is essential to providing the JFC freedom of maneuver within the operational area.** Procedures should allow coordinated employment of air, land, or maritime AMD systems against identified threats, to include unmanned air threats, and employ the inherent flexibility of air defense airborne platforms to mass forces to identify, target, and engage hostile threats.

Refer to JP 3-01, Countering Air and Missile Threats, for detailed information regarding integration of airspace control and AMD operations.

6. Airspace Integration and Joint Fires

a. Airspace control procedures increase in complexity and detail when air forces operate in proximity to, or in conjunction with, surface forces. **Liaison elements are vital when integrating air and surface elements in close proximity.** Each area of operations (AO) is typically defined by specific boundaries and may contain multiple coordination measures such as ACMs and FSCMs to facilitate operations.

Airspace Control Procedures Objectives

- Enhance effectiveness in accomplishing the joint force commander's objectives.
- Facilitate air defense identification.
- Prevent mutual interference.
- Prevent friendly fire incidents and unintended engagements of civil and neutral aircraft.
- Safely accommodate and expedite the flow of all air traffic in the operational area.

Figure III-3. Airspace Control Procedures Objectives

b. **Close coordination is required to integrate and deconflict airspace use with the employment of joint fires.** Component fire support agencies normally establish FSCMs. Integration and deconfliction of airspace and joint fires normally occurs during mission planning and FSCMs, ACMs, and other appropriate coordination measures are disseminated through command, airspace control, and fire support channels. Real-time coordination, integration, and deconfliction of airspace and joint fires with airspace control elements and C2 nodes are essential in fluid situations.

c. **ACMs are employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces.** Examples include minimum risk routes, low-level transit routes, and air-to-air refueling areas (AARs). ACMs provide the three-dimensional description of the airspace, associated restrictions, requests for access, and other applicable coordination procedures the details of which are provided in the ACO. Aircraft (manned or unmanned) and fires may transit through an ACM when pre-planned or coordinated with the appropriate airspace control element. The ACP should specify the categories of ACMs in use for the JOA along with coordination and promulgation methods. The ACP also should include FSCMs and any multinational force or HN ACMs in use.

d. The coordinating altitude (CA) is an ACM. It uses altitude to separate users and as the transition between airspace control elements. Coordination level (CL) is an ACM used to separate fixed-wing and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly. Both ACMs contribute to effective and efficient use of airspace and are used by airspace control elements (i.e., control and reporting center, Marine tactical air operations center, air support operations center, Marine direct air support center, E-2C, AWACS, air defense artillery, Army air defense airspace management /brigade aviation element and military ATC). Airspace control elements should be included in the ACP and promulgated in the ACO. Army echelons incorporate ACP guidance and integrate the ACO, AADP, SPINS, and ATO, via operations orders. To prevent friendly fire incidents and manage operational risk, all airspace users should coordinate with the appropriate airspace control elements when flying or firing through a CA or CL.

e. FSCMs are employed by commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. FSCMs are usually activated for a limited time and refer to areas where fires may be permitted or restricted.

f. The requirement to integrate airspace use in support of ground fire missions requires the determination of the firing locations, the impact location, and the airspace that will be transited by the projectile during flight. Those projectile parameters are integrated with other airspace users. Service liaisons and airspace control elements work closely to ensure that appropriate ACMs and FSCMs integrate surface operations and airspace operations. See JP 3-09, *Joint Fire Support*, for further details.

7. Methods of Airspace Control

The methods of airspace control vary across the range of military operations. They range from positive control of all air assets in an airspace control area to procedural control

of all such assets, or any combination of the two. ACPs and systems need to accommodate these methods based on component, joint, and national capabilities and requirements.

a. Positive control relies on radars, other sensors, cooperative identification systems (IFF/selective identification feature [SIF], precise participant location and identification, blue force tracker, etc.), digital data links, and other elements of the air control system to positively identify, track, and direct air assets. Positive control requires sensors to locate and identify airspace users in real-time and communications, to maintain continuous contact with the user. Positive control procedures include instructions on transition to procedural control, if positive control systems are degraded or become unavailable, and take into account differences between civil and military communications and surveillance systems.

b. Procedural control relies on comprehensive air defense identification procedures and ROE; voice and digital communications between aircraft and airspace control elements; ACMs, such as low-level transit routes, minimum-risk routes (MRRs), CA, CL, ROZs, standard use Army aircraft flight routes, and high-density airspace control zones (HIDACZs); aircraft identification maneuvers; and FSCMs such as restrictive fire areas and no-fire areas. Procedural control measures for UASs, Army Tactical Missile Systems (ATACMSs), guided multiple launch rocket systems, Tomahawk land-attack missiles (TLAMs), and other cruise missile systems, include special corridors, surface-to-surface missile system measures, and altitude reservations.

c. **The ACS needs to be responsive to evolving enemy threats and changing tactical situations.** Enemy forces will attempt to degrade airspace control capabilities by direct attack and electronic measures. Therefore, airspace control elements must be able to effectively employ positive control, procedural control, or some combination of the two as dictated by mission requirements. Figure III-4 summarizes positive and procedural methods of airspace control. A list of coordination measures including ACMs and FSCMs with accompanying descriptions, discussion of uses, and considerations is contained in Appendix C, “Coordination Measures.”

8. Enemy Air Engagement Operations

Engaging enemy aircraft with friendly air, land, and maritime assets must be fully coordinated to optimize all aspects of friendly combat power. This reduces uncoordinated simultaneous engagements, missed engagements, and unintended engagement of friendly, civil, and neutral aircraft. Selection of different engagement zones presents the commander with flexible options, based on risk and operational requirements. Combining fighter engagement zone (FEZ) and missile engagement zone (MEZ) operations presents the enemy with the challenge of defending, against two entirely different weapon systems, greatly decreasing enemy survivability.

a. **Joint Engagement Zone (JEZ) Operations.** These operations involve the employment and integration of multiple air defense systems within the same engagement zone in order to simultaneously engage enemy air targets in the operational area. Targets within the JEZ may be prioritized for engagement, based on friendly weapons system strengths. For example, fighters could be designated to primarily engage enemy aircraft,

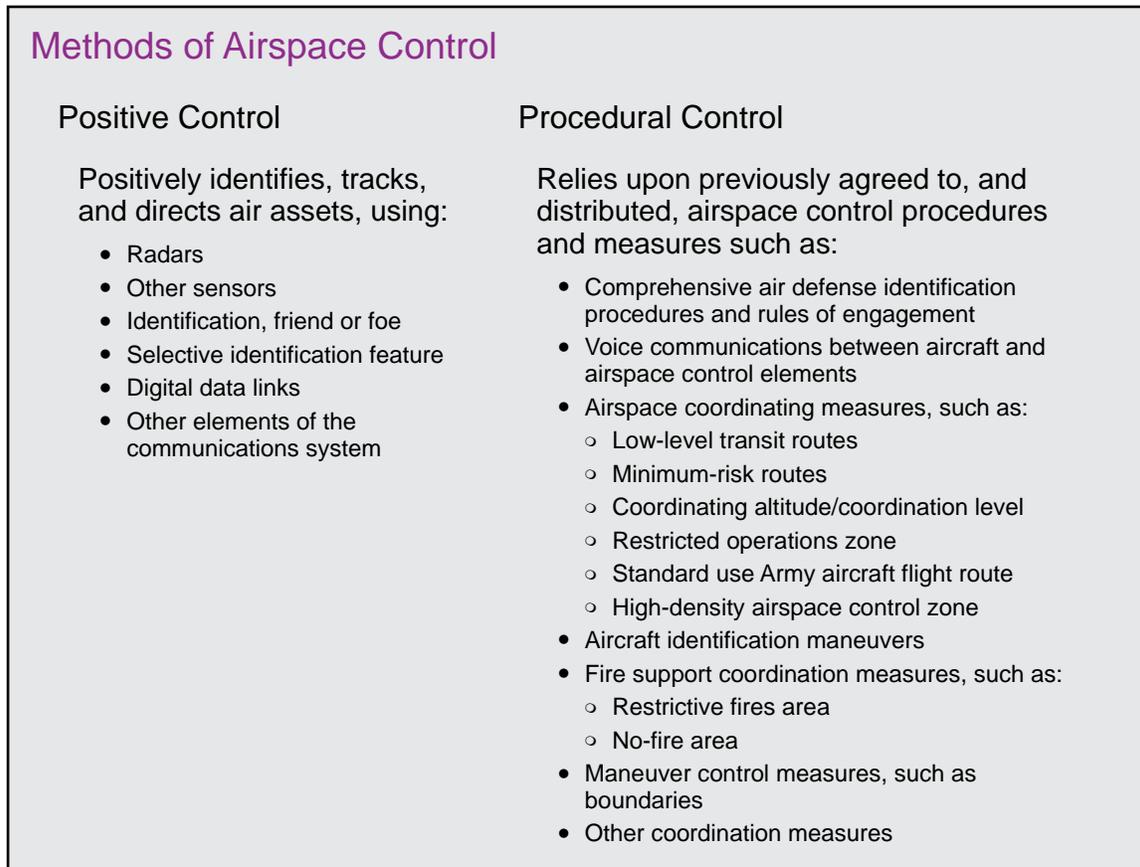


Figure III-4. Methods of Airspace Control

while concurrently, surface-based missiles would be designated to primarily engage enemy missile threats in the same zone. However, successful JEZ operations depend on positively identifying friendly, neutral, and enemy aircraft. Positive control may ensure that real-time engagement taskings are based on comprehensive situational awareness. Under procedural control, all air defense systems must be capable of accurately discerning between enemy, neutral, and friendly aircraft in a highly complex environment before full joint engagement operations can occur. If these conditions cannot be met, separate zones for missile and fighter engagement should be established. JEZ operations require effective integrated C2. Positive control is normally used within a JEZ during maritime operations.

b. **FEZ Operations.** These operations usually take place above and beyond the range of surface-based (land and sea) air defenses. Effective FEZ operations are highly dependent on coordination and flexibility within the ACS. FEZ operations enable the JFC to respond immediately with fighter assets to an enemy air offensive regardless of its location. FEZ operations within the airspace control area should not result in undue restraints on the ability of surface-based air defense systems to engage the threat.

c. **MEZ Operations.** These operations are ideal for point defense of critical assets, protection of maneuver units in the forward area, and area coverage of the joint security area. MEZ operations offer the JFC the ability to engage the enemy with a high- and low-altitude, all-weather capability. Advanced surface-to-air missile systems have long-range,

high-firepower capability that can engage enemy aircraft beyond the forward line of own troops or disrupt massed enemy air and missile attacks prior to committing fighter assets. Properly employed, MEZ operations are effective across the full range of air defense operations and enemy threats. MEZ operations need to be designed to maximize the full range and capabilities of various systems. MEZ operations within the airspace control area should not result in undue restraints on the flexibility and ability of friendly air assets to respond to changing threats.

d. **Coordination for Engagement Operations.** The following general guidelines apply for coordination of engagement operations:

(1) For urgent or emergency combat situations, **the ACA can authorize deviations from established policies and procedures.** In these situations, the ACA should notify all affected AMD assets and airspace users prior to authorizing deviations. The JFC should be informed as soon as possible.

(2) When the circumstances necessitate the rapid deployment and employment of forces for which there are no approved OPLANs or previously established ACPs, a **temporary ACS**, responsive to immediate tactical or operational requirements, will be established.

e. **Airspace Control and Integration of Friendly EW and Suppression of Enemy Air Defenses (SEAD).** The JFC integrates EW and its use in SEAD missions into the overall planning effort, and an EW coordination cell may be established to perform this function. Proper integration of EW can help prevent degrading the effectiveness of airspace control elements and ensure the positive control aspects of the ACS. Failure to integrate EW, especially its use by SEAD assets, may degrade the effectiveness of some airspace control elements, degrade some of the positive control aspects of the ACS, reduce the capability to identify aircraft, and require increased dependence on coordination through procedural control measures. Additional procedural control measures may also be required to compensate for foreseen degradations that cannot be avoided. Thorough planning is required to preclude EW and SEAD efforts from unduly degrading AMD and airspace control efforts.

9. Multinational Integration

a. The operational environment, including international agreements, enemy and friendly force structures, and commanders' CONOPS, will determine specific arrangements for airspace control while conducting multinational operations. Coordination between multinational forces is essential to achieve mission success and avoid unintended engagement of friendly, civil, and neutral aircraft. Multinational aircraft involved in the operation should appear on the daily ATO to help ensure deconfliction and effective airspace control.

b. Planners should consider the releasability of classified information contained in the ACP, ACO, and SPINS. This may necessitate the release and management of these documents in several versions on different networks.

See JP 3-16, *Multinational Operations*, and *Allied Joint Publication 3.3.5(A)*, *Doctrine for Joint Airspace Control*, for more information regarding the responsibilities and requirements of ACSs during multinational operations.

10. Unmanned Aircraft

a. UA may be operated in the airspace control area by each joint force component, multinational forces, and other government agencies. **The established principles of airspace control used in manned flight operations will normally apply to UA operations.** However, UA may be difficult to visually acquire and do not always provide a clear radar or electronic signature, presenting a potential hazard to other aircraft. Therefore, UA operations require special considerations in terms of airspace control and usage. Specific UA volumes of airspace may need to be included in the ACO. Additionally, the ACO should provide times of activation of airspace for UA operations. In cases where a standing ACO is used, specific details are addressed in the ATO/SPINS. In either case, efforts should be made to integrate UA with manned flight operations to enable a more flexible and adaptable airspace structure.

b. While the C2 processes for UA are similar to those for manned assets, several characteristics of UA can make C2 particularly challenging:

(1) UAS communication links are generally more critical than those required for manned systems. In the event of lost communications, a manned aircraft will typically continue with the mission and/or return safely to a home base or alternate field. Although some UA may be capable of autonomous reaction (i.e., collision avoidance) or preplanned response in the event of lost communication (i.e., return to base), UA typically rely on a near-continuous data exchange for both flight control and payload management. Therefore, communications security, and specifically bandwidth protection (from both friendly interference and adversary action), is imperative. Accordingly, airspace planners must account for these contingencies.

(2) In some cases, transferring aircraft and/or payload control between multiple operators may be possible while UA are airborne. However, close coordination amongst all potential operators is required. Additionally, specific communications-outage procedures should be clearly defined in the event communications are jammed or lost entirely.

(3) Current UA are typically not as robust as manned systems when component failures or environmental extremes are encountered. Wind, precipitation, turbulence, and icing can significantly degrade or altogether nullify UA platform and/or sensor capabilities.

(4) Most larger UA have considerably longer endurance times than comparable manned systems. Planners should exploit this capability when tasking UA assets.

c. **Defensive Considerations.** Friendly C2 and air defense nodes must be able to differentiate between friendly and enemy UA and cruise missiles. The ACP, AADP, and SPINS should minimize the potential for exploitation of airspace control and identification procedures. Specifically, the use of CL and a standard use Army aircraft flight route by UA enables efficient and timely use of the airspace, but also makes it more difficult for air

defense operators to differentiate between friend and foe. This type of airspace control is typically procedural, and not positive, control. Therefore, UAS operators must follow prescribed airspace control, and air defense identification, procedures in order to prevent friendly fire and/or prevent enemy UA exploitation of that airspace.

For more details on UA considerations, see JP 3-30, Command and Control of Joint Air Operations, and Army Tactics, Techniques, and Procedures 3-04.15/MCRP 3-42.1A/NTTP 3-55.14/AFTTP 3-2.64, Multi-Service Tactics, Techniques, and Procedures for Unmanned Aircraft Systems.

11. Missiles

Missiles (e.g., cruise missiles, surface-to-air missiles, ATACMS, and global positioning system multiple launch rocket system) are standoff weapons fired from a launch point on a pre-programmed flight profile to a designated target. Because these missiles have a small radar cross-section, they are difficult to track with normal radar units conducting airspace control. Therefore, positive control is not an effective means to deconflict missile operations from other air operations. **It is imperative that procedural ACMs be established in the ATO, ACO, or SPINS.** Procedural ACMs for missiles may include ROZs for launch and target locations, missile flight path corridors that include specified altitudes, and position area hazard/target area hazard locations for ATACMS.

12. High-Density Airspace Control Zone

a. A HIDACZ may be established when planned operations involve a concentrated and complex mix of airspace users and weapons supporting a ground or amphibious operation. General considerations for HIDACZ establishment include:

- (1) Single command authority with the requisite means to effectively provide C2 for air operations and fires supporting the ground or amphibious operation.
- (2) HIDACZ operations comply with guidance contained in the AADP, ACO, and SPINS.
- (3) Control of HIDACZ air operations and fires can be provided using positive and/or procedural control methods.
- (4) The HIDACZ is published in the ACO to include its effective times.

b. In some cases, the operational environment may require airspace and fires densities that exceed the capability of a single HIDACZ controlling authority. One method to avoid this is to establish another ACM (e.g., ROZ, second HIDACZ) above or adjacent to the HIDACZ controlled by another agency or component.

For more information on HIDACZ, see FM 3-52.1/AFTTP 3-2.78, Multi-Service Tactics, Techniques, and Procedures for Airspace Control.

HIGH-DENSITY AIRSPACE CONTROL ZONE USAGE DURING THE SECOND BATTLE OF FALLUJAH, OPERATION IRAQI FREEDOM

The second Battle of Fallujah (Fallujah II) during Operation IRAQI FREEDOM was fought from 8 to 20 November 2004. It involved a ground force of 10,000, consisting of Marine, Army, United Kingdom, and Iraqi units, supported by Marine, Air Force, Navy, and Army fixed- and rotary-winged manned and unmanned aircraft performing close air support, medical evacuation, and intelligence, surveillance, and reconnaissance missions, among others. It was fought in a city five miles by five miles with over 15,000 buildings. During the battle, coalition ground forces began the attack from the north heading south, swung east to west, and revisited cleared enemy locations, as required to counter insurgents attempting to reestablish lost positions. Air and ground fires had to be orchestrated to attack the enemy while preventing friendly fire incidents and limiting non-combatant injuries and collateral damage.

Due to the anticipated complexity of air operations, Marine planners requested, and the airspace control authority (ACA) approved, the establishment of a 30 nautical mile diameter, 30,000 foot high-density airspace control zone (HIDACZ), centered over the city. Within the HIDACZ, the 3rd Marine Aircraft Wing Direct Air Support Center was collocated with the 1st Marine Division and procedurally controlled all air activity between 25,000 and 30,000 feet. Below 25,000 feet, procedural control was provided by joint terminal attack controllers in coordination with the division air officer. Four holding points were established in the HIDACZ with helicopters operating at 5,000 feet and below, and fixed-wing aircraft operating at 9,000 feet and above. Additionally, the ACA established airspace coordinating measures around the HIDACZ under the control of an air support operations center and control and reporting center to support aircraft entering and exiting the fight.

The Fallujah II HIDACZ provided the ground commander with the tactical flexibility to clear airspace rapidly, allocate resources, and coordinate and integrate direct and indirect fires supporting ground operations.

Various Sources

13. Airspace Control in Maritime Operations

a. **In joint maritime operations**, specific control and defensive measures may differ from those used in a land-based operation. The joint force maritime component commander may be designated the control authority for a specific airspace control area or sector for the accomplishment of a specific mission. The massing of maritime forces into a strike force of combined arms (air, surface, and subsurface) under a single commander reduces the front to be defended, enhances mutual support, and simplifies identification and deconfliction of friendly aircraft and other ADMs. To ensure unity of effort and minimal interference along adjacent boundaries, **the commander responsible for maritime airspace control must coordinate with the ACA.**

b. In joint operations composed of adjacent maritime and land environments, specific control and defensive measures may be a composite of those measures normally employed in each environment. **The JFC for such operations needs to ensure detailed coordination of control and defensive measures with the affected air, land, and maritime component commanders.** Additionally:

(1) Assignment of airspace allows the JFC to exercise C2 of forces, deconflict high volumes of aircraft and missiles, and defend forces. During amphibious operations, joint force maritime component commander, or the commander, amphibious task force (ATF), is normally designated as the ACA. The complexity and size of an amphibious operation directly determines the amount of airspace allocated.

(2) The level of airspace control allocated to the amphibious force depends on the type of coordination measure approved for the operation. If an AOA is established, air control procedures are identical to HIDACZ procedures. **If only an AO is established, the amphibious force will normally request that the ACA establish a HIDACZ over this geographic area.** For air defense, the amphibious defense zone includes the AOA plus a buffer zone so that the incoming threat can be engaged before it crosses into the AOA. The items shown below should be considered when establishing a HIDACZ to support an amphibious operation:

- (a) Airspace control capabilities of the maritime force.
- (b) Procedures for expeditious movement of aircraft into and out of the HIDACZ.
- (c) Range and type of naval surface fire support available.
- (d) Coordination of fire support, as well as air defense weapons control orders or status within, and in the vicinity of, the HIDACZ.
- (e) Entry and exit routes and procedures into and out of the HIDACZ and to the target area.
- (f) Air traffic advisory, as required. Procedures and systems must also be considered for ATC service during instrument meteorological conditions.
- (g) Location of enemy forces inside, and in close proximity to, the HIDACZ.
- (h) At a minimum, the HIDACZ should cover the ATF sea echelon areas and extend inland to the landing force's fire support coordination line (FSCL). Additionally, the HIDACZ should be large enough to accommodate the flow of fixed-wing aircraft into and out of the amphibious airspace.

(3) Under the ATF, the Navy tactical air control center is normally the agency responsible for controlling all air operations within the allocated airspace regardless of mission or origin, to include supporting arms. An airborne element or surface combatant with the requisite air C2 capabilities may also serve this function. Regardless of where

actual airspace control is exercised, close and continuous coordination between airspace control and air defense agencies is essential in any amphibious operation. Emphasis will be placed on simple, flexible ATC plans and a combination of positive and procedural airspace control. Most amphibious operations will take place in a radar environment, allowing for increased control over air missions. Amphibious forces operating in a non-radar environment will rely exclusively on procedural control. Amphibious air control plans employ a combination of positive and procedural control methods.

For further details on airspace control in amphibious operations, refer to JP 3-02, Amphibious Operations.

c. Considerations need to be made for aircraft based outside the AO. There is a good probability that aircraft will have to transit carrier control zones. Corridors can be preplanned, limiting impact on carrier operations. Corridors should be planned to minimize aircraft flight time/fuel requirements.

14. Airspace Control Assessment

Assessment is a continuous process that measures progress of the joint force toward mission accomplishment. Specific to airspace control, the focus is on measuring progress toward achieving JFC airspace control objectives, as detailed in the ACP/ACO and other documents associated with the joint air tasking cycle, such as the ATO, AOD, AADP, and SPINS. The ACA and staff determine assessment actions and measures during planning and use these to monitor progress toward accomplishing tasks and objectives. Measures are qualitative and quantitative and apply at the operational and tactical levels of airspace control. Tactical airspace control assessment provides a significant source of information for performing operational airspace control assessment. Examples of tactical assessments include effectiveness of coordination measures in supporting air, land, and maritime operations, ACM/FSCM conflicts, and efficiency of ATC procedures. Airspace control elements and airspace users work with the ACA's airspace planners to make adjustments to the current ACO, subsequent ACOs, and the ACP. These efforts, in turn, inform the operational level assessment performed by the ACA and staff. The results of operational level airspace control assessment are forwarded to the JFACC's strategy division operational assessment team and used to inform the JFACC's assessment of air operations provided to the JFC.

For further details on assessment of air operations, refer to JP 3-30, Command and Control of Joint Air Operations.

CHAPTER IV

AIRSPACE CONTROL EXECUTION BY PHASE

“The way of the warrior is to master the virtue of his weapons.”

Miyamoto Musashi, A Book of Five Rings

1. General

The JP 5-0, *Joint Operation Planning*, phasing construct is an extremely useful guide to generalize airspace control responsibilities, activities, systems, documents, and liaison requirements across the range of military operations. Although an operation could proceed sequentially through each phase of the operational planning process, most operations will not. Each operation is unique and will require unique solutions to military obstacles.

2. Phase 0–Shape

a. **The shape phase is inclusive of normal and routine military airspace activities to deter potential adversaries and ensure or solidify relationships with friends and allies.** Various joint, multinational, and interagency airspace activities are executed with the intent to enhance international legitimacy and gain cooperation in support of defined military and national strategic objectives. They are designed to ensure success by shaping perceptions and influencing the behavior of both adversaries and allies, developing allied and friendly military capabilities for self-defense and multinational operations, improving information exchange and intelligence sharing, and providing US forces with peacetime and contingency airspace access.

b. The HN retains control of the airspace and joint forces primarily use existing international or HN aeronautical information publications (AIPs) for airspace procedures or guidelines; airspace and navigation services are the sovereign right and responsibility of the HN.

c. **Although the JFC may not designate a standing ACA during this phase, the JFC should appoint a lead agent, normally the commander with the preponderance of air assets and the ability to command and control them, for coordinating the resolution of issues related to airspace control, ATC, terminal instrument procedures, and navigation aids, within the operational area.** The commander, Navy forces, is normally assigned responsibility for airspace procedures applicable to fleet air operations over international waters within the operational area, and only advises the JFC’s lead agent as appropriate. The JFC’s lead agent is delegated the authority for developing joint force airspace requirements in coordination with the other Service components and representing those joint force airspace requirements to DOD, interagency, international, or HN authorities, as appropriate. Additionally, the lead agent normally serves as the focal point to:

(1) Provide assistance to the JFC, components, Services, and supporting commands, on airspace, air traffic, or navigation aid matters.

(2) Develop appropriate coordination measures in support of JFC planning to include airspace requirements for UA.

(3) Coordinate current and future airspace and navigation aid availability for components and supporting commands through joint mission essential task list inputs.

(4) Coordinate HN navigation aids inspections with US Air Force Flight Standards Agency, US Army Air Traffic Services Command, Headquarters US Army, United States Army Aeronautical Services Agency, Naval Airspace and Air Traffic Control Standards and Evaluation Agency, FAA/ICAO aviation system standards, and the DOD program management office for flight inspection.

(5) Ensure navigation aids are included on the DOD essential foreign-owned navigation aids list, if deemed an enduring requirement.

(6) Develop and establish procedures for airspace actions or issues that cannot be resolved by component commands consistent with applicable DOD, JFC, component, international, and HN guidance.

(7) Ensure altitude reservations are coordinated for all DOD aircraft transiting or operating within the operational area.

(8) Develop friendly HN airspace capabilities through the joint force theater engagement plan, training, and exercises.

d. In addition to ensuring continuation of routine DOD flight operations during the shaping phase, joint force airspace planners establish effective relationships with key operational area airspace authorities, develop specific ACPs in preparation for future operations, and build airspace planning expertise. Regular DOD or joint force interaction with HN authorities and participation in regional airspace conferences, establishes relationships with the HN for quick resolution of issues and effective coordination of airspace requirements.

e. Development of ACPs should be as thorough as possible, and include airspace control considerations from peace, to combat, operations and through all follow-on phases of the OPLAN. Additionally, **the ACP should integrate known international or HN ATC, airspace control, and air defense capabilities.** Primary planning considerations include identification of airspace required for joint force operations and proposed coordination process for obtaining that airspace. Joint operation planning should consider procedures to transfer the ACS from the HN to the ACA, rerouting of airways, ACA responsibilities to continuity of civil aviation operations, and HN notification of ACA areas of control, through notices to airmen (NOTAMs) or AIP entries. Appendix A, "Airspace Control Plan Development Considerations," provides details of ACP topics.

f. Special consideration should be given to planning airspace management responses to long-range missile launches into friendly territory. Rapid notification procedures should be developed and practiced to allow unhindered rapid response to defeating enemy missiles in flight.

3. Phase I–Deter

a. Transition to phase I begins with identification and determination of a crisis situation requiring joint force action and crisis action planning to develop a campaign plan with ACP if no OPLAN or concept plan exists. Available joint force airspace planners will develop or revise the ACP for airspace actions required in phase I execution, as well as considerations and planning for follow-on phases.

b. **Strategic Considerations.** Upon receipt of authoritative planning direction, airspace planning must be refined to reflect and support the planning effort, in light of the situation. Airspace planning necessarily entails coordination with international and multiple national authorities, and is politically sensitive. Release of airspace plans can potentially compromise OPSEC, but can also increase the geographic uncertainty of potential adversaries and may have deterrent or deceptive effects. Since the airspace planning and preparation measures discussed in the following paragraphs may also have the same effects, airspace planning and coordination efforts must be considered with other strategic undertakings.

c. The deter phase is normally a demonstration of joint force capabilities and resolve to deter undesirable adversary action. It is largely characterized by preparatory actions that specifically facilitate execution of subsequent phases of the operation or theater campaign. Specific airspace actions may include developing the finalized ACP and airspace database build for ACO publication; obtaining initial over flight and airspace permission; and assigning joint force airspace liaison personnel to Department of State, US embassies, multinational, or HN organizations, to coordinate airspace requirements for subsequent phases of the operation. Liaisons can facilitate timely exchange of airspace control information, especially in a multinational environment where language barriers can impede crucial cross-communication necessary for safe and effective airspace control. Planning for a robust ACS should be a priority. Procedural shortfalls should be recognized and addressed in the ACP. Airspace control element requirements should be identified and sourced. Commanders and planners should recognize that ACS capabilities may be limited until these requirements are met.

d. Normally the ACA (or JFC's lead agent for airspace control) establishes a dedicated airspace planning team to finalize the ACP, coordinate with the AADC for AADP deconfliction, and develop the ACO for current and future operations. The ACP and AADP should complement each other and ensure the orderly transition from peacetime operations to combat operations. The ACA (lead agent) may:

(1) Coordinate with the joint force, components, interagency, multinational partners, and HN to define airspace boundaries for inclusion in the ACP (if granted liaison authority from the JFC).

(2) Request airspace planning augmentation from components, Services, interagency or multinational organizations, as required for planning efforts and/or as liaisons.

(3) Establish key relationships or agreements with appropriate international and regional airspace control agencies concerning ACA and coordination during joint force operations.

(4) Identify required joint force ACSs and personnel required to support airspace control through phased operations and deploy those assets, as required.

(5) Coordinate DOD/FAA/ICAO NOTAM system availability to support intertheater dissemination of flight operating information, flight check aircraft, and scheduling for air traffic facility inspection.

(6) Identify the desired concept for the ACSs in phase IV/V and consider placing critical components of the enemy air control system on the restricted target list to preserve them for future use.

e. For the deter phase, **the ACP should contain procedures to fully integrate the resources of military and civil ATC facilities responsible for terminal-area airspace control and en route ATC.** Airspace planners should coordinate the ACP with representatives of the HN, in whose airspace the operations will take place, and with civil air activities that may occur in or near the airspace. Broad areas of concern for developing the ACP include familiarity with the basic OPLAN, knowledge of host and multinational capabilities, procedures of military and civil airspace control and ATC systems, and general locations of friendly and enemy forces.

f. Additionally, any HN agreements that could impact air operations must be considered. HN agreements concerning airspace control may only be negotiated by authorized personnel in accordance with DOD instructions and ICAO protocols. Surface-to-air weapons and air defense aircraft should be integrated for maximum effectiveness. **Proper coordination with civil air operations is especially important during transitions into or out of wartime status or during non-wartime periods of heightened tensions.** Political constraints, national and military ACSs and procedures, and the capabilities and limitations of these systems are important considerations in planning for required joint force airspace control. Applicable information from the ACP should be distributed to joint and multinational forces as well as HNs, allies, and international organizations such as ICAO.

4. Phase II—Seize the Initiative

a. Transition to phase II may be accomplished on the JFC's initiative or in response to an enemy attack. During combat operations, peacetime airspace rules and organizations change, and the nature of these changes will vary from theater to theater. **The ACP should contain instructions to transition from peacetime to combat in simple, clear steps.** The ACP should include the airspace control concepts for transition to phase II operations and robust airspace control methods for potential degraded operations. Airspace planners should be integrated into development of the master air attack plan to ensure required airspace is designed for combat operations and the transition from peacetime to combat airspace control is seamless.

b. At the outset of phase II combat operations, **every effort should be made to exclude civil aviation operations from the affected JOA.** Redesign of airspace or notification of impending changes to airspace control, could signal adversaries of a pending operation, so timing for airspace transition to potential combat should be considered. Advanced or open notification of airspace changes should be integrated into the information plan for OPSEC or military deception considerations.

c. **Joint air operations play a critical role in actions to seize the initiative or gain access to a theater or JOA.** During phase II, the JFC seeks to seize the initiative in combat and noncombat situations through the application of appropriate joint force capabilities. In combat operations this involves executing offensive operations at the earliest appropriate time, forcing the enemy to offensive culmination and setting the conditions for decisive operations. Normally the beginning of phase II signals the shift from peace to combat operations.

d. Integrating airspace control with DCA and offensive counterair operations is especially critical during efforts to gain air superiority. Effective identification procedures are required for both airspace control and DCA to facilitate engagement of enemy aircraft and missiles, and provide safe passage of friendly aircraft and missiles.

e. In the opening stages of phase II, effective airspace control hinges on understanding the OPLAN, JFC intent, the airspace environment, and the requirements to effectively control it. The JFACC will publish the AOD, which describes the JFACC's implementation of JFC intent and provides guidance for operations prioritization. **During major operations the JFACC is typically the supported commander for the counterair mission in the operational area and integrates offensive and DCA operations to achieve air superiority.** Against adversaries with a credible air and air defense threat, efforts to seize the initiative will likely be more sequential than simultaneous, because many operations may require air superiority as a precondition for success. For phase II operations where the US already has access and air superiority, the ACP and the AADP may be less restrictive and operations either sequential or simultaneous.

f. Until air superiority is achieved, the phase II ACP may restrict friendly military and civil airspace users. **Operating platforms with limited identification and communications equipment places those systems at risk and also complicates counterair operations by increasing the risk of friendly fire and the probability of successful enemy air or missile attacks.** Certain friendly airborne systems (cruise missiles, UA) may be mission-essential and yet lack identification, communications equipment, or autonomous sense-and-avoid capability. Specific coordination measures are required for these users to minimize the impact to the counterair fight, while maximizing efforts to seize the initiative. **Systems that cannot be positively identified as friendly may be restricted during the opening stages of combat operations, prior to obtaining air superiority.** At commencement of combat operations, the JFACC should immediately execute plans and procedures to reduce civil aviation to levels most compatible with combat operations. Some level of civil aviation, especially commercial airlift flying in support of multinational operations, will probably be ongoing throughout all the phases.

g. The JFACC should ensure the ACP and ACO are fully coordinated with supporting components, multinational partners, and HN air and air defense forces, even if the HN is not participating in combat operations. This coordination should also include all special operations elements that participate in the phase II access operations. Because some of these plans are highly sensitive, the JFACC should ensure alternate communication means are available to pass information to friendly organizations that do not have access to normal military communications.

h. Phase II airspace control planning should fully integrate fires from all friendly forces. **Failure to integrate all fires in initial planning significantly increases the potential for friendly fire and may delay execution of combat operations.** Early integration of airspace and fires prevents costly decisions which result when two components plan to use the same airspace, at the same time, for different missions.

i. The JFACC, working with the JFC and other components, should clearly identify the risk of combining fires and aircraft operations (manned and unmanned), particularly at the outset of the campaign when airspace may be more constrained due to the higher density of air and land operations. These risks should be addressed in the ACP, along with the level of risk the JFC is willing to accept for each phase.

j. Component fires systems, such as conventional air-launched cruise missile, TLAM, ATACMS, and other systems, have small radar cross sections and are difficult to track with typical air control radar systems. In addition, most of these systems are uncontrolled once they are fired or launched. They should be deconflicted with procedural ACMs. Other systems such as TLAM Block IV are capable of being retargeted in flight to attack alternate targets. These systems may require short-notice application of procedural ACMs for deconfliction. The ACP should establish procedures to include procedural control and coordination of fires. These procedures should also include real-time deconfliction measures for reprogrammable systems and missions in the ATO, ACO, and SPINS.

k. **The JFACC normally serves as the supported commander for the JFC's overall air interdiction effort.** Airspace control, to include integration with fires, is critical to the success of air interdiction. The JFACC should ensure that all air interdiction operations use common reference systems (e.g., Global Area Reference System) and tactics, techniques, and procedures (TTP). The JFACC advises the JFC and includes the coordinated common reference systems and TTP in the ACP, AADP, ATO, ACO, and SPINS. These plans should also include real-time airspace control procedures for the engagement of time-sensitive targets.

l. The use of UA over the battlefield has increased significantly in recent years. UA require access to airspace with manned aircraft, particularly in the vicinity of high value targets. In order to minimize risk and maximize the effectiveness of UA, **the ACP should direct the deconfliction of joint, component, and multinational UA platforms.** UA deconfliction is critical during all phases of an operation and requires detailed planning and coordination. Comprehensive means for aircraft separation must be employed to reduce the risk of mid-air collision. One important consideration is that unlike their manned counterparts, the vast majority of UA do not have on-board sense-and-avoid capability.

m. During phase II the JFC and the components should conduct thorough intelligence preparation of the operational environment. Part of this intelligence preparation includes information gained through the use of intelligence collection platforms. Many intelligence collection platforms are airspace users and may require access to the same airspace. **Prior to the JFACC achieving air superiority, friendly airborne intelligence collection platforms that do not meet identification or control requirements increase the difficulty of counterair operations and increase the risk of successful enemy air attack.** If the JFC

decides to restrict the use of friendly platforms without sufficient identification or communications systems, the ACP should clearly delineate which operating areas are restricted, and what capabilities (e.g., IFF) are required to operate within them. If the JFC elects not to restrict operations by these systems, the ACA should clearly outline the increased risk to the JFC, for approval.

n. Intelligence collection asset airspace congestion over high interest areas may be mitigated through an effective and integrated airborne intelligence collection plan. **Multiple, component-organic, airborne intelligence collection assets staring at the same objective area add complexity to airspace control operations and may delay fire support to forces on the ground.**

For more information on the use of intelligence collection assets, see JP 2-0, Joint Intelligence.

o. Regardless of whether the operation or campaign is sequential or simultaneous, the joint force land component commander, if designated, or one or more land component commanders will normally become the supported commanders for their AOs during the latter stages of phase II. Ideally, the air component will have achieved at least localized air superiority over the AO; however, this may not always be the case. Once air superiority is achieved, the JFC may allow increased operations by airborne systems with limited identification and communications capabilities. An area-wide COP with minimum latency is a significant contributor to both air defense and airspace control. **The ACP may employ fewer restrictions on certain systems which are visible on the airspace COP, whereas systems with less identification and communications equipment may require more restrictions and coordination.**

p. When one or more component commanders become the supported commanders with airspace requirements, the ACS may be modified and integrated to meet mission requirements. The ACA should consider the following when creating the phase II transition portion of the ACP:

- (1) The C2 plan for the initial employment of other forces.
- (2) Adequate communications within the operational area to execute the plan.
- (3) ACS elements required to meet the scheme of maneuver for component commanders.
- (4) Delegation of airspace to components (e.g., joint special operations area, AOA, HIDACZ, or sectors) and integration of component airspace control elements.
- (5) Planned use of adversary systems for the post-hostility ACS (consider which, if any, facilities should be placed on the restricted target list for preservation).

5. Phase III–Dominate

a. Phase III includes the full employment of joint force capabilities and continues the appropriate sequencing of forces into the operational area as quickly as possible. When an

operation or campaign is focused on conventional enemy forces, the dominate phase normally concludes with decisive operations that drive an enemy to culmination and achieve the JFC's combat-oriented operational objectives. During major operations, phase III may involve ground forces and require bringing a large number of manned and UA into the operational area. In addition, the amount of fires assets using airspace will likely increase, requiring additional planning, deconfliction, and airspace control actions. The ACP should include updates and changes that will occur as the JFC transitions the force to phase III.

b. During phase III operations, the ACP/ATO/ACO and SPINS should be updated to include responsibilities and authorities (including special operations forces and multinational forces) for the following:

- (1) Designated areas within ground and/or maritime AOs.
- (2) Procedures for AOAs, joint special operations areas, forward operating bases, and airfields.
- (3) ATC/air traffic service at forward operating bases.
- (4) ATC/air traffic service at captured airfields.
- (5) Area air defense and short-range air defense integration behind the FSCL and forward line of own troops.
- (6) Fixed-wing, UA, tiltrotor, and rotary-wing deconfliction methods.
- (7) Procedures for immediate ROZs in support of personnel recovery.

c. During phase III, airspace control elements should expect a significant increase in the number of indirect fires in the land and/or maritime AOs. Although, indirect fire systems are airspace users, current airspace control TTP and FSCMs do not lend themselves to seamless integration. ACMs do not normally restrict other fires in the airspace; only FSCMs serve to restrict fires. To effectively integrate indirect fires with aircraft, airspace control elements should determine which ACMs must also be protected by additional measures such as an airspace coordination area or air corridor and coordinate accordingly. As an example, an AAR is an ACM that would prevent other aircraft from entering the area without coordination with the controlling agency. However, without an airspace coordination area or specific ROZ, nothing prevents indirect fires from passing through the AAR. Integrating indirect fires with other airspace users requires careful consideration of risk and user priority, as well as an understanding of the joint air operations plan and components' fires plans.

d. Airspace planners should understand that ACMs and FSCMs that overly restrict the employment of indirect fires may create an unacceptable level of risk for the JFC. Similarly, fires planners should understand there are some areas in which the JFC cannot accept the risk of mixing indirect fires and manned aircraft. Effective airspace and fires integration can solve many of these issues by adjusting fires and moving aircraft to allow both systems to operate in unison. Integration of fires and aircraft is a critical part of phase III airspace control planning.

e. Missions such as air assaults, airborne assaults, personnel recovery missions, and other incursions into enemy territory require specific airspace control coordination. These events may require ACMs such as a HIDACZ, ROZ, MRR, or low-level transit route. These missions may require specific C2 relationships, organizations, and authorities which should be planned for and included in ACP/ATO/ACO and SPINS.

6. Phase IV—Stabilize

a. Phase IV operations are typically characterized by a shift in focus from sustained combat operations to stability operations. These operations help reestablish a safe and secure environment and provide essential government services, emergency infrastructure reconstruction, and humanitarian relief in order to restore local political, economic, and infrastructure stability. Civilian officials may lead operations during part or all of this phase, but the JFC typically will provide significant supporting capabilities and activities. During this phase, the joint force may be required to perform local governance until legitimate local entities are functioning. The ACA could be required to perform roles traditionally associated with an HN aviation authority and may include the development of aeronautical information (e.g., instrument procedures, publications, NOTAMs), civil flight planning procedures, certification of procedures, aviation safety investigation, training of HN and/or contract personnel, or operation of airspace infrastructure systems. Considerations should be given to developing aeronautical information to end state standards expected when the HN assumes control.

b. A key ACA requirement is to plan for the HN's successful resumption of airspace control, including establishing HN capabilities, if required. Priorities for airspace control may require adjustments to address increasing civil authority for the airspace environment, including a clear determination of what level of risk will be accepted during this phase. The transition from sustained combat operations to stability operations is typically accompanied by increased requests for airspace and airfield access by non-JFC organizations. As such, **the ACP should address airspace access criteria for non-JFC organizations, joint force to civil airspace priority, and identification and acceptance of associated civil airspace operating risks.** Documents such as the joint air operations plan, AOD, ACP, AADP, SPINS, ROE, letters of agreement, and international agreements may significantly change to support the transition. Assistance from the defense attaché office, Department of State, the FAA, ICAO, or a contracted agency should be considered in assisting to establish HN capabilities.

c. **Reducing threats to air operations, and establishing security, are required to set conditions to transfer ACA to the HN government.** Particularly during this phase, the airspace environment is dynamic, requiring the ACA to continuously balance the needs of military operations against increased civil airspace access and effective transfer of ACA to a legitimate HN entity. **Transition of airspace control to the HN should be considered carefully with regard to continuing JFC military operations.** Reduced military ACA may result in decreased flexibility for operations with increased coordination and approval requirements from the HN. The main transition planning concepts include:

- (1) Ensuring required HN capabilities exist.

- (a) Install or increase use of commercial systems.
 - (b) Use of contracted ATC capabilities.
 - (c) Transfer of contracts or excess systems to the HN.
- (2) Developing a clear agreement and timelines for airspace control transfer.
- (a) Ensure continuing joint force airspace mission needs are supported.
 - (b) Establish joint force ACS linkage to HN systems.
- (3) Decreasing joint force airspace control support requirements.
- (a) Consolidate and reduce JFC manpower/systems footprint.
 - (b) Leverage HN capabilities and systems.

d. Interorganizational coordination, and development of an airspace transition plan with key transition milestones are required to reduce friction between the various JFC, US Government, international, and HN agencies that may be involved in the airspace transition process. The identification of, and agreement on, milestone criteria and the airspace infrastructure end-state by the various stakeholders, are key to a successful transition plan. **Normally, a government or civil organization will handle the planning and requirements for reconstituting the HN ACS.** However, the ACA may be the only one able to assume this primary leadership role, especially in seriously degraded or failed state scenarios. The ACA's responsibilities as the acting control authority for HN airspace should be detailed in an appropriate delegation document from the HN and referenced in the HN AIP.

e. **The pre-conflict HN airspace control structure (civil or military controlled) should provide the basic airspace end-state concept, unless destroyed or deemed ineffective.** Simplicity and basic effectiveness of the HN airspace system should be a primary goal of the ACA's transition plan. Additionally, the ACA should focus specifically on the ACS to prevent excessive requirements or delays from other aviation-related issues such as airfield construction or certification issues. Also the HN or other supporting agencies may desire to modify or upgrade the ACS, which will most likely increase the timelines for the end-state transition milestone. Ideally, the final HN end-state airspace infrastructure plan should meet the minimum requirements for ICAO certification (unless post-conflict situations dictate otherwise) and also take into account HN airspace sovereignty requirements. Interim transfer of airspace control to HN military forces or contracted ATC services should be considered, to allow the redeployment of joint force airspace control forces.

f. **Interoperability between military and civil airspace users and airspace control agencies is crucial** for safe and effective integration of airspace control, including air defense, joint fires, and civil aviation. Use of military liaison teams embedded in HN airspace control facilities may be required to ensure the adequate coordination and representation of continuing joint force airspace requirements. Civil documents that govern

the HN airspace system may become more authoritative for all airspace users and by the end of phase IV, should be the primary source of guidance and regulation. The joint force should ensure that proper agreements exist between the HN and adjacent nations to enable the effective air defense of the country, as well as the safe and efficient flow of air traffic across borders. Management and guidance of information assurance and spectrum management should be accounted for in the transition plan. The proliferation of devices that exploit, interrupt, or use the electromagnetic spectrum is likely during this phase, as a result of increased activity of other international and HN agencies and general increase in economic communications activities.

7. Phase V–Enable Civil Authority

a. This phase is predominantly characterized by joint force support to legitimate civil governance in the operational area. Depending upon the level of indigenous state capacity, joint force activities during phase V may be at the behest of that authority or they may be under its direction. **The joint force will perform key airspace functions, either as the delegated ACA, or as supporting airspace service provider under the HN aviation authority.** The JFC's ACA can expect frequent coordination and interaction on airspace issues with HN, multinational, interagency, and other airspace system participants. The ACA is in a supporting role to the legitimate civil aviation authority in the region, throughout the enable civil authority phase. Normally operations are concluded when joint force redeployment is complete. However, continued joint force support and involvement with the HN and other agencies, beyond the termination of the joint operation, may be required to attain the desired end state.

b. **Phase V could result as a normal phased transition from phase IV stability operations or as joint force support to a humanitarian relief effort, natural disaster, or other catastrophic event.** During this phase, HN aviation regulations and guidance are the authoritative source for airspace control procedures. To the maximum extent possible, original HN aviation and airspace documents should be used by the joint force to comply with HN aviation authority intent. If derivative HN guidance is required for dissemination or amplification in joint force ACP, ACO, ATO, or SPINS, the information should be included verbatim and referenced to the original source document. In situations where HN procedures must be modified by the military for airspace access or use, HN authorities should be consulted and provide appropriate approval of the deviation. Formal agreement or understanding should be coordinated between joint forces and the HN authority to ensure clarity on exact airspace control responsibilities. Frequent and extensive coordination among the joint force, HN, and other agency personnel on airspace control issues may require close proximity of staffs or use of liaisons.

c. **Based on the level of required support, airspace control personnel may be required to provide Service-specific controllers, liaisons, and trainers to support HN authorities.** JFC and JFACC staff personnel need to ensure that an agreement is in place with the HN authorizing DOD personnel or equipment to provide air traffic services in sovereign HN airspaces. Joint force personnel may be required to use systems provided by the HN or other agencies. Joint force personnel may also be embedded with HN or other agency personnel to provide airspace control services. In these situations, training and

certification for joint forces personnel or systems should be determined by the HN authority. Given that few organizations have the deployable airspace control personnel and systems, it should be expected that joint forces support airspace operations using Service airspace control capabilities. A combined FAA/Air Force or Army system certification flight check is a unique capability often requested to certify HN radar or navigation aids that have been installed or returned to service. Note: Until acquisition of self-defense capable flight check aircraft, the JFACC may have to orchestrate special procedures (ground patrols in vicinity of approach path, escorts, night-only operations, etc.) to accomplish flight checks in hostile airspace.

d. Setting the conditions and milestones for the relief of joint forces and the reestablishment of effective HN airspace control is crucial for successful phase V termination. HNs with limited capabilities may rely on joint forces for long-term airspace control functions and divert available resources to other higher priority HN programs. In such situations, international, nongovernmental organization, or contracted services may provide a bridging alternative to take airspace control functions from joint forces until the HN is prepared to accept them.

APPENDIX A AIRSPACE CONTROL PLAN DEVELOPMENT CONSIDERATIONS

1. Purpose

This appendix provides an example of the topics that should be considered when developing an ACP.

2. Airspace Control Plan Topics

Every ACP will be different and based on the objectives of the military operations, the capabilities and limitations of both friendly and enemy forces, and the contributions and complexities introduced by HN and multinational forces, as well as the access required to the airspace by other authorized aircraft. ACP topics include:

a. Description of the conditions under which the guidance and procedures in the ACP are applicable (e.g., the exercise, OPLAN, OPORD, military operation).

b. Description of the operational area within which the ACP applies.

c. Appointment of the ACA; location of ACA headquarters (if required).

d. List of the capabilities that exist within the joint force and in the operational area and that provide airspace control (ground sites, airborne capability) and the means of communicating with those airspace control elements.

e. Description of the duties and responsibilities of:

(1) The ACA.

(2) Each airspace user within the joint force (to include requirements for liaison to and coordination with the ACA).

(3) Each airspace control element used in the ACS (site, facility, or airborne platform) and agency-specific duties. The plan should delineate whether the element provides procedural or positive control and its assigned sector.

f. Description of the interface between commanders and coordination elements and the procedures adopted to integrate the ACP with the AADP and deconflict or synchronize airspace requirements for DCA operations and other joint operations.

g. Description of the interface with the FAA, HN ATC system, and/or ICAO.

h. Description of the interface among the theater ACS(s) and the elements within those systems for ATC.

i. Description of the interfaces between US and multinational forces (if operations include forces from other nations), to coordinate and deconflict airspace requirements.

j. Plans to provide for continuity of airspace control operations under degraded conditions (alternate headquarters, alternatives for key radar or C2 nodes, and other required capabilities).

k. Description of the AOD mission and airspace priorities.

l. Description of coordination measures and procedures for the joint force.

m. Description of the procedures to propose, approve, modify, and promulgate each procedural coordination measure available for use within the operational area (e.g, HIDACZ, JEZ, FEZ, MEZ, MRR, CA, CL, air refueling tracks, corridors, ROZs, and other appropriate procedures).

n. Description of IFF/SIF procedures.

o. Description of orbit procedures with retrograde plans.

p. Description of procedures and systems to compile and promulgate the ACO that provides airspace control procedures and/or guidance in effect for a specified time period. The ACO would normally contain:

(1) Modifications to guidance and/or procedures contained in the ACP.

(2) Active or current IFF/SIF procedures.

(3) Location and procedures associated with active procedural coordination measures (HIDACZ, JEZ, FEZ, MEZ, MRR, CA, CL, corridors, ROZs, and other appropriate procedures).

(4) Procedures for entering and transiting active ROZs (e.g., AAR).

(5) Location of active orbit areas.

(6) Active UA launch, recovery, and mission areas.

(7) Launch and impact ROZs for surface-to-surface missiles.

(8) FSCMs, both restrictive and permissive (e.g., FSCLs, kill boxes, no-fire areas, restrictive fire areas, free-fire areas).

(9) Applicable ground force control measures (e.g., battle positions, engagement areas, air axis of advance).

(10) Use of Global Area Reference System or theater-specific area reference system.

q. Description of the interface with agencies/commands providing intertheater air mobility support for the purpose of coordinating and distributing airspace control information/procedures.

- r. Procedures for submitting ACO/ACP changes.
- s. Description of operational and tactical level assessment measures and processes.
- t. Document airspace control lessons learned in accordance with Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3150.25, *Joint Lessons Learned Program*.
- u. Phase transitions.

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APPENDIX B
AIRSPACE COORDINATING MEASURE REQUEST REPRESENTATIVE
FORMAT

TO:

FROM:

SUBJECT: Request for Airspace

- (A) Airspace Coordinating Measure Requested
- (B) Location (Latitude/Longitude)
- (C) Altitude(s)
- (D) Valid/Void Times (normally ZULU)
- (E) Type Aircraft/Mission
- (F) Controlling Agency
- (G) Comments

NOTE: This format is representative of the appropriate USMTF. Refer to Military Standard 6040, *US Message Text Formatting Program*, and associated directives for detailed instructions.

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APPENDIX C COORDINATION MEASURES

Coordination measures are employed to facilitate planning and efficient execution of operations while simultaneously providing safeguards for friendly forces. Coordination measures are categorized as ACMs, FSCMs, maneuver control measures (MCMs), air reference measures (ARMs), ADMs, maritime defense measures (MDMs), and ATCMs. The coordination measure categories are discussed below and presented with their associated usages, abbreviations, and amplifying information. All entries in the figures that are referenced outside of joint doctrine are annotated.

1. Airspace Coordinating Measure (ACM). A measure employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. ACMs are approved by the ACA and promulgated via ACO. Transit of an ACM requires coordination with the owning airspace control element. ACMs generally fall into one of three types: air corridor (Figure C-1); restricted operations zone (Figure C-2); or stand-alone (Figure C-3).

2. Fire Support Coordination Measure (FSCM). A measure employed by commanders to facilitate the rapid engagement of targets and simultaneously provide safeguards for friendly forces. FSCMs may be permissive or restrictive, (see Figure C-4).

3. Maneuver Control Measure (MCM). A measure established by the supported/supporting commander on the surface to define lines of responsibility in support of movement and maneuver of friendly forces, (see Figure C-5).

4. Air Reference Measure (ARM). A measure used for command and control purposes that defines a point over the ground or a volume of airspace. ARMs do not require coordination to pass over or through, (see Figure C-6).

5. Air Defense Measure (ADM). A measure planned, coordinated, and employed to facilitate responsibilities for identification, detection, and tracking to engage enemy air and missile threats as directed by the AADC. ADMs are restrictive, (see Figure C-7).

6. Maritime Defense Measure (MDM). A measure planned, coordinated, and employed by the maritime commander to facilitate maritime offensive and defensive actions. MDMs may be restrictive or permissive, (see Figure C-8).

7. Air Traffic Control Measure (ATCM). A measure established by civil (including HN) or military ATC for the purpose of expeditious and safe movements of aircraft. ATCMs are directive and restrictive and are established in conjunction with civil and military airspace control authorities and ICAO (as appropriate), (see Figure C-9).

Airspace Coordinating Measures—Air Corridor (1 of 2)

Air Corridor Usages		
Minimum-Risk Route		MRR
Temporary Minimum-Risk Route		TMRR
Transit Corridor		TC
Transit Route		TR
Low-Level Transit Route		LLTR
Special Corridor		SC
Standard Use Army Aircraft Flight Route		SAAFR

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Air Corridor (AIRCOR)	A restricted air route of travel specified for use by friendly aircraft established for the purpose of preventing friendly aircraft from being fired upon by friendly forces.	<p>AIRCOR procedures are used to route aviation combat elements between such areas as forward arming and refueling points, holding areas, and battle positions. Altitudes of an AIRCOR do not exceed the coordinating altitude, if established.</p> <p>If a coordinating altitude has been established, an AIRCOR is implemented by the using authority. If a coordinating altitude has not been established, an AIRCOR is established by the airspace control authority at the request of the appropriate ground commander.</p>
Minimum-Risk Route (MRR)	A temporary corridor of defined dimensions recommended for use by high-speed, fixed-wing aircraft that presents the minimum known hazards to low-flying aircraft transiting the combat zone.	<p>MRRs are used primarily for cross-forward line of own troops operations. Close air support aircraft do not usually use MRRs in the vicinity of the target area.</p> <p>MRRs are established based on known threats.</p>
Temporary Minimum Risk Route (TMRR)	(NATO) A temporary route of defined dimensions established to route air traffic between transit routes or the rear boundary of the forward area and their operations area in direct support of ground operations. (AJP-3.3.5)	Due to the short tasking time required for activation of TMRRs, TMRR dimensions may not be reflected in the ACO.

Figure C-1. Airspace Coordinating Measures—Air Corridor (1 of 2)

Airspace Coordinating Measures—Air Corridor (2 of 2)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Transit Corridor (TC)	(NATO) A bi-directional corridor established in the rear area to route aircraft through air defenses, in the rear area, where appropriate, with minimum risk. (AJP-3.3.5)	Pre-planned TCs will be published in ACPs, as will their horizontal and vertical dimensions. Air traffic services not normally provided.
Transit Route (TR)	(NATO) In air operations, a temporary corridor of defined dimensions established in the forward area to minimize the risks to friendly aircraft from friendly air defenses or surface forces. (AAP-06)	TRs may link up with TCs or appear independently. Horizontal and vertical dimensions of TRs will be published in the ACP. Requests for activation of TRs are to be submitted to the airspace control authority. Activated TRs will be published in the ACO.
Low-Level Transit Route (LLTR)	(NATO) A temporary corridor of defined dimensions established in the forward area to minimize risk to friendly aircraft from friendly air defenses or surface forces. (AJP- 3.3.5)	LLTRs are bi-directional routes through areas of forward-deployed friendly forces. LLTRs should avoid weapons-free zones and base defense zones.
Special Corridor (SC)	(NATO) In air operations, an air corridor established to accommodate the special routing requirements of specific missions. (AJP-3.3.5)	Requests for activation of SCs are to be submitted to the airspace control authority. Activated SCs will be published in the ACO. Promulgation of such corridors should include: route designators or easily identified references; vertical and horizontal dimensions; activation period(s); and users, where applicable.
Standard Use Army Aircraft Flight Route (SAAFR)	Route established below the coordination level to facilitate the movement of Army aviation assets; it is normally located in the corps through brigade rear areas of operation and does not require approval by the airspace control authority.	SAAFR is an airspace coordinating measure used by Army assets for administrative and logistic purposes. If altitudes are at or below the coordination level, SAAFRs are implemented by the using authority. If a coordination level has not been established, an AIRCOR is established by the airspace control authority at the request of the ground commander.

Figure C-1. Airspace Coordinating Measures—Air Corridor (2 of 2)

Airspace Coordinating Measures—Restricted Operations Zone (1 of 2)

Restricted Operations Zone Usages		
Air-to-Air Refueling Area	AAR	
Airborne Command and Control Area	ABC	
Airborne Early Warning Area	AEW	
Close Air Support Area	CAS	
Combat Air Patrol	CAP	
Drop Zone	DZ	
Electronic Combat	EC	
Landing Zone	LZ	
Pickup Zone	PZ	
Reconnaissance Area	RECCE	
Special Operations Force Area	SOF	
Surface-to-Surface Missile System	SSMS	
Surface-to-Surface Munitions	SSM	
Unmanned Aircraft Area	UA	

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Restricted Operations Zone (ROZ)	Airspace reserved for specific activities in which the operations of one or more airspace users is restricted.	A pre-planned ROZ will be published in the ACP. Requests for activation of ROZs are to be made to the airspace control authority. A ROZ may be established to support personnel recovery.
Air-to-Air Refueling Area (AAR)	(NATO) Airspace of defined dimensions set aside for air-to-air refueling operations. (AAP-06)	AAR tracks are typically set up in a race track configuration.
Airborne Command and Control Area (ABC)	(NATO) Airspace of defined dimensions established specifically for aircraft conducting battlefield command and control. (AJP-3.3.5)	
Airborne Early Warning Area (AEW)	(NATO) Airspace of defined dimensions established specifically for aircraft conducting early warning. (AJP-3.3.5)	
Close Air Support Area (CAS)	Airspace designated for holding orbits and used by rotary- and fixed-wing aircraft that are in close proximity to friendly forces.	Requires detailed integration of each air mission with the fire and movement of supported ground forces.
Combat Air Patrol (CAP)	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.	Established as part of a fighter, missile, or joint engagement zone (fighter engagement zone/missile engagement zone/joint engagement zone) planning for defensive counterair operations.
Drop Zone (DZ)	A specific area upon which airborne troops, equipment, or supplies are airdropped.	
Electronic Combat (EC)	(NATO) Airspace established specifically for aircraft engaging in electronic combat (AJP-3.3.5)	
Landing Zone (LZ)	Any specified zone used for the landing of aircraft.	
Pickup Zone (PZ)	(NATO) Aerial retrieval area (AJP-3.3.5)	

Figure C-2. Airspace Coordinating Measures—Restricted Operations Zone (1 of 2)

Airspace Coordinating Measures—Restricted Operations Zone (2 of 2)

Restricted Operations Zone Usages		
Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Reconnaissance Area (RECCE)	(North Atlantic Treaty Organization) Airspace established specifically for aircraft conducting reconnaissance. (Allied Joint Publication-3.3.5)	
Special Operations Force Area (SOF)	Airspace of defined dimensions established specifically for special operations forces missions by special operations forces airspace planners.	An special operations forces airspace volume may be limited in size to accommodate a discrete direct action mission or may be extensive enough to allow a continuing broad range of unconventional warfare operations.
Surface-to-Surface Missile System (SSMS)	Airspace defined specifically for Army Tactical Missile Systems and Tomahawk land-attack missile route of flight and launch and impact points.	
Surface-to-Surface Munitions (SSM)	Airspace of defined dimensions established specifically for surface to surface munitions route of flight and launch and impact points.	
Unmanned Aircraft Area (UA)	Airspace of defined dimensions created specifically for unmanned aircraft operations. Generally, this airspace will consist of the area in which unmanned aircraft missions are conducted, not en route airspace.	

Figure C-2. Airspace Coordinating Measures—Restricted Operations Zone (2 of 2)

Airspace Coordinating Measures—Stand Alone

Stand Alone Usages	
Coordinating Altitude	CA
Coordination Level	CL
High-Density Airspace Control Zone	HIDACZ
No Fly Area	NOFLY

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Coordinating Altitude (CA)	An ACM that uses altitude to separate users and as the transition between different airspace control elements.	Airspace control elements should be included in the airspace control plan (ACP) and promulgated in the airspace control order (ACO). Army echelons incorporate ACP guidance and integrate the ACO, area air defense plan, special instructions, and air tasking order via operations orders. All airspace users should coordinate with the appropriate airspace control elements when transitioning through, or firing through, the coordinating altitude.
Coordination Level (CL)	A procedural method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly.	The height of the CL will be published in the ACP. The ACP/ACO will specify whether the CL is advisory or mandatory. All airspace users should coordinate with the appropriate airspace control elements when transitioning or firing through the CL.
High-Density Airspace Control Zone (HIDACZ)	<p>Airspace designated in an ACP or ACO, in which there is a concentrated employment of numerous and varied weapons and airspace users. A HIDACZ has defined dimensions, which usually coincide with geographical features or navigational aids. Access to a HIDACZ is normally controlled by the maneuver commander. The maneuver commander can also direct a more restrictive weapons status within the HIDACZ.</p> <p>(NATO) Airspace of defined dimensions, designated by the airspace control authority, in which there is a concentrated employment of numerous and varied weapons/airspace users. (AAP-06)</p>	<p>HIDACZ allows ground/Marine air-ground task force commanders to restrict a volume of airspace from users not involved with ongoing operations. It restricts use of the airspace because of the large volume and density of fires surrounding ground operations within the described geographic area.</p> <p>The volume of air traffic demands careful coordination to limit the potential conflict among aircraft needed for mission essential operations within the HIDACZ and other airspace users. When establishing a HIDACZ, consider the following:</p> <ol style="list-style-type: none"> (1) Minimum-risk routes (MRRs) into and out of the HIDACZ and to the target area. (2) Air traffic advisory as required. Procedures and systems also must be considered for air traffic control (ATC) service during instrument meteorological conditions. (3) Procedures for expeditious movement of aircraft into and out of the HIDACZ. (4) Coordination of fire support, as well as air defense weapons control orders or status within and in the vicinity of the HIDACZ. (5) Location of enemy forces inside of and within close proximity to, the HIDACZ. HIDACZ is nominated by the ground commander and approved by the airspace control authority.
No Fly Area (NOFLY)	Airspace of specific dimensions set aside for a specific purpose in which no aircraft operations are permitted, except as authorized by the appropriate commander and controlling agency.	

Figure C-3. Airspace Coordinating Measures—Stand Alone

Fire Support Coordination Measure (1 of 3)

Fire Support Coordination Measure Usages	
Airspace Coordination Area	ACA
Coordinated Fire Line	CFL
Fire Support Coordination Line	FSCL
Free Fire Area	FFA
Kill Box	KILLBX
No Fire Area	NFA
Restrictive Fire Line	RFL
Restrictive Fire Area	RFA
Zone of Fire	ZF

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Airspace Coordination Area (ACA)	A three-dimensional block of airspace in a target area, established by the appropriate commander, in which friendly aircraft are reasonably safe from friendly surface fires.	<p>An airspace coordination area is used primarily in CAS situations for high-volume fire. Friendly aircraft are reasonably free from friendly surface fires, with artillery, rotary-winged, and fixed-winged aircraft given specific lateral or vertical airspace within which to operate.</p> <p>Timely implementation of an airspace control area is dependent on the ground situation. The burden of deconfliction rests with the ground commander.</p> <p>An ACA may be formal or informal. A formal ACA is one that is coordinated, planned, and promulgated through the ACO process. An informal ACA is one that is established and used for specific operations that do not conflict with other jointly used airspace.</p>
Coordinated Fire Line (CFL)	<p>A line beyond which conventional surface-to-surface direct fire and indirect fire support means may fire at any time within the boundaries of the establishing headquarters without additional coordination.</p> <p>(NATO) A line beyond which conventional or improved indirect fire means, such as mortars, field artillery, and naval gunfire, may fire without additional coordination (AJP-3.3.5)</p>	A CFL is a permissive measure. The purpose of the CFL is to expedite the surface-to-surface engagement of targets beyond the CFL without coordination with the land commander in whose area of operations the targets are located.

Figure C-4. Fire Support Coordination Measure (1 of 3)

Fire Support Coordination Measure (2 of 3)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Fire Support Coordination Line (FSCL)	<p>A fire support coordination measure established by the land or amphibious force commander to support common objectives within an area of operations; beyond which all fires must be coordinated with affected commanders prior to engagement, and short of the line, all fires must be coordinated with the establishing commander prior to engagement.</p> <p>(NATO) Within an assigned area of operations, a line established by a land or amphibious force commander to denote coordination requirements for fires by other force elements which may affect the commander's current and planned operations. The fire support coordination line applies to fires of air, ground, or sea weapons using any type of ammunition against surface or ground targets. Note: In the context of this definition, the term "surface targets" applies to those in littoral or inland waters within the designated area of operations. (AAP-06)</p>	<p>A FSCL is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. FSCL use is oriented to air-land operations and is normally located only on land; however, in certain situations, such as littoral areas, it may affect both land and sea areas.</p> <p>Changes to the FSCL require notification of all affected forces within the area of operations and must allow sufficient time for these forces and/or components to incorporate the change. Whenever possible, restrictive measures are employed by commanders to enhance the protection of friendly forces operating beyond the FSCL.</p> <p>Forces attacking targets beyond the FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid friendly fire incidents. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces operating beyond the FSCL. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL; however, failure to do so may increase the risk of friendly fire incidents and waste resources.</p> <p>Supporting elements attacking targets beyond the FSCL must ensure the attack will not produce effects on or to the rear of the FSCL. Short of a FSCL, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander.</p>
Free Fire Area (FFA)	A specific designated area into which any weapons system may fire without additional coordination with the establishing headquarters.	An FFA is a permissive measure. It is used to expedite joint fires and to facilitate the jettisoning of aircraft munitions.
Kill Box (KILLBX)	A three-dimensional permissive fire support coordination measure with an associated airspace coordination measure used to facilitate the integration of joint fires.	The primary purpose of a kill box is to allow lethal attack against surface targets without further coordination with the establishing commander and without terminal attack control. When used to integrate air-to-surface and surface-to-surface indirect fires, the kill box will have appropriate restrictions.

Figure C-4. Fire Support Coordination Measure (2 of 3)

Fire Support Coordination Measure (3 of 3)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
No Fire Area (NFA)	An area designated by the appropriate commander into which fires or their effects are prohibited.	An NFA is a restrictive measure. There are two exceptions to NFA fires prohibition: (1) When the establishing headquarters approves joint fires within the NFA on a mission-by-mission basis. (2) When an enemy force within the NFA engages a friendly force and the engaged commander determines there is a requirement for immediate protection and responds with the minimal force needed to defend the force.
Restrictive Fire Line (RFL)	A line between converging friendly surface forces that prohibits fires or their effects across that line.	An RFL is a restrictive measure. The purpose of an RFL is to prevent friendly fire incidents and duplication of engagements by converging friendly forces.
Restrictive Fire Area (RFA)	An area in which specific restrictions are imposed and into which fires that exceed those restrictions will not be delivered without coordination with the establishing headquarters.	An RFA is a restrictive measure. The purpose of an RFA is to regulate joint fires into an area according to the stated restrictions set by the establishing headquarters.
Zone of Fire (ZF)	An area into which a designated ground unit or fire support ship delivers, or is prepared to deliver, fire support.	A ZF is a restrictive measure that requires detailed integration of each air mission with the fire and movement of supported ground forces. Joint fires may or may not be observed.

Figure C-4. Fire Support Coordination Measure (3 of 3)

Maneuver Control Measure (1 of 2)

Maneuver Control Measure Usages	
Amphibious Objective Area	AOA
Boundary	BNDRY
Forward Line of Own Troops	FLOT
Fire Support Area	FSA
Joint Operations Area	JOA
Joint Special Operations Area	JSOA
Phase Line	PL

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Amphibious Objective Area (AOA)	A geographical area (delineated for command and control purposes in the initiating directive) within which is located the objective(s) to be secured by the amphibious force. This area must be of sufficient size to ensure accomplishment of the amphibious force's mission and must provide sufficient area for conducting necessary sea, air, and land operations.	It allows the commander, amphibious task force, freedom of air operations within the AOA. Coordination with nonorganic aircraft for entry into, and exit from, the AOA, and deconfliction within the AOA with operations just outside the AOA, normally requires the continuous, active involvement of the affected commanders and staffs.
Boundary (BNDRY)	A line that delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas.	In land warfare, it is a line by which surface areas of operation between adjacent units and/or formations are defined.
Forward Line of Own Troops (FLOT)	A line that indicates the most forward positions of friendly forces during linear operations at a specific time. (NATO) A line which indicates the most forward positions of friendly forces in any kind of military operation at a specific time. (AAP-06)	The FLOT normally includes the forward location of covering screening forces. The zone between the FLOT and fire support coordination line is typically the area over which friendly ground forces intend to maneuver in the near future and is also the area where joint air interdiction operations are normally executed through the air support operations center and/or direct air support center.
Fire Support Area (FSA)	An appropriate maneuver area assigned to fire support ships by the naval force commander from which they deliver gunfire support to an amphibious operation.	An FSA is normally associated with amphibious operations but can be used whenever it is desirable to have a fire support ship occupy a certain geographic position.

Figure C-5. Maneuver Control Measure (1 of 2)

Maneuver Control Measure (2 of 2)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Joint Operations Area (JOA)	<p>An area of land, sea, and airspace, defined by a geographic combatant commander or subordinate unified commander, in which a joint force commander (usually a joint task force commander) conducts military operations to accomplish a specific mission.</p> <p>(NATO) A temporary area defined by the Supreme Allied Commander Europe, in which a designated joint commander plans and executes a specific mission at the operational level of war. A joint operations area and its defining parameters, such as time, scope of the mission, and geographical area, are contingency-or mission-specific and are normally associated with combined joint task force operations. (AAP-06)</p>	
Joint Special Operations Area (JSOA)	An area of land, sea, and airspace assigned by a joint force commander to the commander of a joint special operations force to conduct special operations activities.	It may be limited in size to accommodate a discrete direct action mission or may be extensive enough to allow a continuing broad range of unconventional warfare operations.
Phase Line (PL)	A line utilized for control and coordination of military operations, usually an easily identified feature in the operational area.	

Figure C-5. Maneuver Control Measure (2 of 2)

Air Reference Measure

Air Reference Measure Usages	
Air Control Point	ACP
Buffer Zone	BZ
Bullseye	BULL
Contact Point	CP
IFF Switch Off Line	IFFOFF
IFF Switch On Line	IFFON
Search and Rescue Point	SARDOT

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Air Control Point (ACP)	(NATO) A point that is defined and used for navigation, command and control, and communication. (AJP-3.3.5)	Unmanned aircraft system routing is normally accomplished through existing air control points.
Buffer Zone (BZ)	Airspace designed specifically to provide a buffer between various airspace coordinating measures.	
Bullseye (BULL)	An established reference point from which the position of an object can be referenced.	
Contact Point (CP)	In air operations, the position of which a mission leader makes radio contact with an air control agency.	
Identification, Friend or Foe Switch Off Line (IFFOFF)	The line demarking where friendly aircraft stop emitting an identification, friend or foe (IFF) signal.	
Identification, Friend or Foe Switch On Line (IFFON)	The line demarking where friendly aircraft start emitting an IFF signal.	
Search and Rescue Point (SARDOT)	A predesignated specific location, relative to which isolated personnel provide their position to recovery forces.	

Figure C-6. Air Reference Measure

Air Defense Measure (1 of 3)

Air Defense Measure Usages	
Air Defense Identification Zone	ADIZ
Base Defense Zone	BDZ
Control Zone	CONTZN
Coordinated Air Defense Area	CADA
Fighter Engagement Zone	FEZ
High-Altitude Missile Engagement Zone	HIMEZ
Joint Engagement Zone	JEZ
Low-Altitude Missile Engagement Zone	LOMEZ
Missile Arc	MISARC
Missile Engagement Zone	MEZ
Safe Lane	SL
Short-Range Air Defense Engagement Zone	SHORADEZ
Traverse Level	TL
Weapons Free Zone	WFZ

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Air Defense Identification Zone (ADIZ)	Airspace of defined dimensions within which the ready identification, location, and control of airborne vehicles are required.	Associated with nations or areas of operations, the ADIZ is normally the transition between procedural control areas (outside) and positive control areas (inside). Typically ADIZ is used for sovereign national boundaries, or in the case of areas of operations, for identification in the rear areas. See flight information publications/International Civil Aviation Organization for theater-specific ADIZ and associated procedures and limitations.
Base Defense Zone (BDZ)	An air defense zone established around an air base and limited to the engagement envelope of short-range air defense weapons systems defending that base. Base defense zones have specific entry, exit, and identification, friend or foe, procedures established.	A BDZ provides airspace users with location of the engagement zone for the air defense systems defending a base for mission planning purposes.
Control Zone (CONTZN)	A controlled airspace extending upward from the surface of the Earth to a specified upper limit. (NATO)	
Coordinated Air Defense Area (CADA)	A mutually defined block of airspace between a land-based air commander and a naval commander when their forces are operating in close proximity to one another. (AJP-3.3.5)	

Figure C-7. Air Defense Measure (1 of 3)

Air Defense Measure (2 of 3)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Fighter Engagement Zone (FEZ)	In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with fighter aircraft.	<p>FEZ operations usually take place in airspace above and beyond the engagement ranges of surface-based (land and sea), short-range air defense systems, and are an alternative type of engagement operation if the detailed control aspects of joint engagement zone operations cannot be met.</p> <p>A FEZ normally is used when fighter aircraft have the clear operational advantage over surface-based systems. These advantages could include range, density of Rue, rules of engagement, or coordination requirements. From an airspace control perspective. It provides airspace users with location of the engagement zone for fighter aircraft for mission planning purposes.</p> <p>Coordination and flexibility within the combat airspace control system may be a limiting factor. Under FEZ operations, surface-to-air missile systems will not be allowed to fire weapons unless targets are positively identified as hostile and assigned by higher authority, or unless they are firing in self-defense.</p>
High-Altitude Missile Engagement Zone (HIMEZ)	In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with high altitude surface-to-surface missiles.	<p>HIMEZ normally is used when a high-altitude missile system has a clear operational advantage over using aircraft. These advantages could include range, command and control, rules of engagement, or response time. It provides airspace users with the location of the engagement zone of a high altitude missile system for mission planning purposes.</p> <p>Design of the HIMEZ is contingent on specific weapon system capabilities. Upper-tier intercepts of ballistic missiles take place above the operating altitude of most aircraft. HIMEZ design should account for the intercept parameters of surface-to-air missile systems. Airspace planners should ensure procedures are provided in the ACP/ACO and SPINS to rapidly clear aircraft from airspace expected to be affected by falling debris from upper-tier ballistic missile intercepts.</p>
Joint Engagement Zone (JEZ)	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.	<p>A JEZ provides airspace users with a location for mission planning purposes.</p> <p>JEZs are highly dependent on correct differentiation between friend, neutral, and enemy aircraft.</p>

Figure C-7. Air Defense Measure (2 of 3)

Air Defense Measure (3 of 3)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Low-Altitude Missile Engagement Zone (LOMEZ)	Airspace of defined dimensions within which 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.	LOMEZs provide airspace users with the location of the engagement zone of low-altitude missile systems for mission planning purposes. The design of a LOMEZ is contingent on specific weapon system capabilities.
Missile Arc (MISARC)	(NATO) An area of 10 degrees or as large as ordered by the officer in tactical command, centered on the bearing of the target with a range that extends to the maximum range of the surface-to-air missile. (AJP-3.3.5)	
Missile Engagement Zone (MEZ)	In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threats normally rests with surface-to-air missile systems.	
Safe Lane (SL)	(NATO) A bi-directional lane connecting an airbase, landing site, and/or base defense zone to adjacent routes/corridors. Safe lanes may also be used to connect adjacent activated routes/corridors. (AJP-3.3.5)	Pre-planned SLs and their dimensions will be contained in the ACP. Activated SLs will appear in the ACO.
Short-Range Air Defense Engagement Zone (SHORADEZ)	In air defense, that airspace of defined dimensions within which the responsibility for engagement of air threat normally rests with short-range air defense weapons and may be established within a low- or high-altitude missile engagement zone.	A short-range air defense engagement zone is normally established for the local air defense of high value assets. It provides airspace users with the location of the engagement zone of short-range air defense systems for mission planning purposes. Centralized control of a short-range air engagement zone may not be possible.
Traverse Level (TL)	(NATO) That vertical displacement above low-level air defense systems, expressed both as a height and an altitude, at which aircraft can cross that area. (AAP-06)	TLs normally will be used in conjunction with transit corridors as specified in airspace control plans.
Weapons Free Zone (WFZ)	An air defense zone established for the protection of key assets or facilities, other than air bases, where weapons systems may be fired at any target not positively recognized as friendly.	A weapons free zone is normally used for high-value asset defense and in areas with limited command and control authority. This zone provides airspace users with the location of a weapons free area for mission planning purposes. The area air defense commander declares weapons free with the airspace control authority establishing the zone.

Figure C-7. Air Defense Measure (3 of 3)

Maritime Defense Measure (1 of 2)

Maritime Defense Measure Usages	
Amphibious Defense Zone	ADZ
Approach Corridor	APPCOR
Carrier Control Zone	CCZONE
Cross Over Zone	COZ
Fire-Power Umbrella	FIRUB
Fleet Air Defense Identification Zone	FADIZ
Identification Safety Point	ISP
Identification Safety Range	ISR
Return to Force	RTF
Safety Sector	SAFES
Ship Control Zone	SCZ

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Amphibious Defense Zone (ADZ)	The area encompassing the amphibious objective area and the adjoining airspace required by accompanying naval forces for the purpose of air defense.	An ADZ provides an anti-air warfare area for protection of the amphibious task force. If an ADZ overlaps other land-based air defense areas, appropriate coordination for division of responsibilities and boundaries must be conducted.
Approach Corridor (APPCOR)	(NATO) Airspace established for the safe passage of land-based aircraft joining or departing a maritime force. (AJP-3.3.5)	The approach corridor is usually established on a line between entry/exit gate, and either the force disposition center or along the position and intended movement of the force. The inner boundary is determined by the identification safety range.
Carrier Control Zone (CCZONE)	The airspace within a circular limit defined by five miles horizontal radius from the carrier, extending upward from the surface to and including 2,500 feet unless otherwise designated for special operations, and is under the cognizance of an air officer during visual meteorological conditions. (NATO) An area around a ship operating fixed-/rotary-wing aircraft. (AJP-3.3.5)	
Cross Over Zone (COZ)	A Marine control measure which overlaps a missile engagement zone and a fighter engagement zone. (NATO) Airspace beyond the missile engagement zone into which fighters may pursue targets to complete interception. (AJP-3.3.5)	To facilitate mutual support, defense in depth, and overlapping fires, Marine air-ground task force air defense assets employ a COZ that overlaps a missile engagement zone and fighter engagement zone. This allows command and control, defensive counterair aircraft, and ground-based air defense weapons systems to coordinate engagements by the most appropriate weapons system while maintaining a missile engagement/fighter engagement zone construct.

Figure C-8. Maritime Defense Measure (1 of 2)

Maritime Defense Measure (2 of 2)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Fire-Power Umbrella (FIRUB)	(NATO) An area of specified dimensions defining the boundaries of the airspace over a naval force at sea within which the fire of ships antiaircraft weapons can endanger aircraft, and within which special procedures have been established for the identification and operation of friendly aircraft. (AAP-06)	
Fleet Air Defense Identification Zone (FADIZ)	A FADIZ is a specified area established for identification and flight following of aircraft in the vicinity of a fleet-defended area.	A FADIZ provides tracking, control, and assistance to friendly aircraft within the antiair coverage of the battle group.
Identification Safety Point (ISP)	(NATO) A point at which aircraft, on joining a maritime force, will attempt to establish two-way communications with the surface force and commence identification procedures. (AJP-3.3.5)	
Identification Safety Range (ISR)	(NATO) The minimum range to which aircraft may close to a maritime force without having been positively identified as friendly to ensure that the maritime force does not mistake the aircraft for hostile. (AJP-3.3.5)	
Return to Force (RTF)	Planned route profiles for use by friendly aircraft returning to an aviation-capable ship.	RTF provides a means for easily identifying friendly aircraft.
Safety Sector (SAFES)	(NATO) Established to route friendly aircraft to maritime forces with minimum risk. (AJP-3.3.5)	
Ship Control Zone (SCZ)	(NATO) An area activated around a ship operating aircraft, which is not to be entered by friendly aircraft without permission, in order to prevent friendly interference. (AJP-3.3.5)	

Figure C-8. Maritime Defense Measure (2 of 2)

Air Traffic Control Measure (1 of 4)

Air Traffic Control Measure Usages	
Advisory Route	ADVRTE
Airway	ARWY
Alert Area	ALERTA
Altitude Reservation	ALTRV
Class A Airspace	CLSA
Class B Airspace	CLSB
Class C Airspace	CLSC
Class D Airspace	CLSD
Class E Airspace	CLSE
Class F Airspace	CLSF
Class G Airspace	CLSG
Conditional Route	CDR
Controlled Firing Area	CFA
Danger Area	DA
Flight Information Region	FIR
Military Operations Area	MOA
Prohibited Area	PROHIB
Restricted Area	RA
Special Use Area	SUA
Temporary Flight Restriction	TFR
Warning Area	WARN

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Advisory Route (ADVRTE)	(NATO) A designated route along which air traffic advisory service is available. (AJP-3.3.5)	
Airway (ARWY)	(NATO) A control area or portion thereof established in the form of a corridor equipped with radio navigational aids. (AAP-06)	
Alert Area (ALERTA)	Airspace that may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft.	
Altitude Reservation (ALTRV)	(NATO) A block of altitude reserved for aircraft to transit or loiter. (AJP-3.3.5)	<p>Typical missions requiring assignment of an ALTRV may include air-to-air refueling, airborne early warning, signals intelligence (SIGINT), electronic countermeasures (ECM), or aerial spotting.</p> <p>An ALTRV may have lateral limits as well as mandatory upper and lower limits.</p>

Figure C-9. Air Traffic Control Measure (1 of 4)

Air Traffic Control Measure (2 of 4)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Class A Airspace (CLSA)	Generally, airspace from 18,000 feet mean sea level (MSL) up to and including flight level 600, including airspace overlying the waters within 12 nautical miles of the congruous states and Alaska. Visual flight rules (VFR) operations are not permitted in CLSA.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate flight information publication (FLIP) and notices to airmen (NOTAMs), etc., for detailed information and international airspace requirements.
Class B Airspace (CLSB)	Generally, airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. Air traffic control (ATC) provides separation between all aircraft inside CLSB.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.
Class C Airspace (CLSC)	Generally, airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by radar approach control, and have a certain number of instrument flight rules (IFR) operations or passenger enplanements. ATC provides separation between VFR and IFR inside CLSC.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.
Class D Airspace (CLSD)	Generally, airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports having an operational control tower. The configuration of each CLSD is individually tailored and when instrument procedures are published, the airspace will normally be designated to contain the procedures. Prior to entering CLSD airspace, two-way radio communication must be established and maintained with the ATC facility providing air traffic service.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.
Class E Airspace (CLSE)	Generally, if the airspace is not Class A, B, C, or D, and it is controlled airspace, it is Class E airspace. Also includes federal airways.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.
Class F Airspace (CLSF)	Airspace in which IFR and VFR flights are permitted; all participating flights receive an air traffic advisory service, and all flights receive flight information service, if requested.	This classification of airspace is not used within the US (Federal Aviation Administration Order FAAO JO 7400.9W). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.

Figure C-9. Air Traffic Control Measure (2 of 4)

Air Traffic Control Measure (3 of 4)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Class G Airspace (CLSG)	Airspace not assigned as A, B, C, D, or E is uncontrolled airspace and is designated as CLSG.	This definition is based on classification of airspace within the United States of America (US). Airspace classification may vary by specific location. Airmen and airspace planners should refer to the appropriate FLIP and NOTAMs, etc., for detailed information and international airspace requirements.
Conditional Route (CDR)	(NATO) A nonpermanent air traffic service route or portion thereof that can be planned and used only under certain conditions. (AJP-3.3.5)	
Controlled Firing Area (CFA)	Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground. (FAAO JO 7110.10)	
Danger Area (DA)	(NATO) In air traffic control, an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times. (AAP-06)	DA is not used in reference to areas within the US or any of its territories.
Flight Information Region (FIR)	An airspace of defined dimensions within which flight information service and alerting service are provided.	
Military Operations Area (MOA)	Airspace designated outside CLSA area to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.	
Prohibited Area (PROHIB)	A specified area within the land areas of a state or its internal waters, archipelagic waters, or territorial sea adjacent thereto over which the flight of aircraft is prohibited. (NATO) An airspace of defined dimensions, above the land areas or territorial waters of a state within which the flight of aircraft is prohibited. (AAP-06)	May also refer to land or sea areas to which access is prohibited.
Restricted Area (RA)	Restricted area (air) - Designated areas established by appropriate authority over which flight of aircraft is restricted. (NATO) An airspace of defined dimensions, above the land areas or territorial waters of a state, within which the flight of aircraft is restricted in accordance with certain specified conditions. (AAP-06)	They are shown on aeronautical charts, published in notices to airmen, and provided in publications of aids to air navigation.

Figure C-9. Air Traffic Control Measure (3 of 4)

Air Traffic Control Measure (4 of 4)

Measure (Abbreviation)	Definition/Description	Uses/Planning Considerations
Special Use Area (SUA)	Airspace of defined dimensions identified by an area on the surface of the earth, wherein activities must be confined because of their nature, and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.	Types of special use airspace are: alert area, controlled firing area, military operations area, prohibited area, restricted area, and warning area. (FAAO JO 7110.10)
Temporary Flight Restriction (TFR)	A regulatory action issued by the FAA via the US NOTAM System, under the authority of Title 49, United States Code. TFRs are issued within the sovereign airspace of the US and its territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground.	While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildlife suppression, or aircraft relief activities following a disaster. TFRs may also be issued in support of very important person movements; for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. National Airspace System users or other interested parties should contact a flight service station for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at http://www.faa.gov . The FAA also distributes TFR information to aviation user groups for further dissemination.
Warning Area (WARN)	Airspace of defined dimensions extending from three nautical miles outward from the coast of the US that contains activity that may be hazardous to nonparticipating aircraft.	The purpose of such warning areas is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

Figure C-9. Air Traffic Control Measure (4 of 4)

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APPENDIX D REFERENCES

1. General

- a. Title 10, US Code.
- b. Federal Aviation Administration, *Airspace Management Plan for Disasters*.
- c. Federal Aviation Administration Order (FAAO) JO 7110.10W, *Flight Services*.
- d. FAAO JO 7400.2J, *Procedures for Handling Airspace Matters*.
- e. FAAO JO 7400.9X, *Airspace Designations and Reporting Points*.

2. Department of Defense Publications

- a. DOD Directive 4500.54E, *DOD Foreign Clearance Program (FCP)*.
- b. DOD Foreign Clearance Guide (FCG): <https://www.fcg.pentagon.mil/>.
- c. DOD Directive 5100.01, *Functions of the Department of Defense and Its Major Components*.
- d. Military Standard 6040B1, *DOD Interface Standard, US Message Text Format (USMTF) Description*.

3. Chairman of the Joint Chiefs of Staff Publications

- a. CJCSI 3150.25E, *CJCS Joint Lessons Learned Program*.
- b. CJCSI 3151.01C, *Global Command and Control System Common Operational Picture Reporting Requirements*.
- c. CJCSM [Chairman of the Joint Chiefs of Staff Manual] 3122.01A, *Joint Operation Planning and Execution System (JOPEX), Volume I, Planning Policies and Procedures*.
- d. CJCSM [Chairman of the Joint Chiefs of Staff Manual] 3130.03, *Adaptive Planning and Execution (APEX) Planning Formats and Guidance*.
- e. JP 1, *Doctrine for the Armed Forces of the United States*.
- f. JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*.
- g. JP 2-0, *Joint Intelligence*.
- h. JP 2-01, *Joint and National Intelligence Support to Military Operations*.
- i. JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*.

- j. JP 2-03, *Geospatial Intelligence in Joint Operations*.
- k. JP 3-0, *Joint Operations*.
- l. JP 3-01, *Countering Air and Missile Threats*.
- m. JP 3-02, *Amphibious Operations*.
- n. JP 3-03, *Joint Interdiction*.
- o. JP 3-04, *Joint Shipboard Helicopter and Tiltrotor Aircraft Operations*.
- p. JP 3-05, *Special Operations*.
- q. JP 3-06, *Joint Urban Operations*.
- r. JP 3-08, *Interorganizational Coordination During Joint Operations*.
- s. JP 3-09, *Joint Fire Support*.
- t. JP 3-09.3, *Close Air Support*.
- u. JP 3-14, *Space Operations*.
- v. JP 3-16, *Multinational Operations*.
- w. JP 3-17, *Air Mobility Operations*.
- x. JP 3-30, *Command and Control for Joint Air Operations*.
- y. JP 3-50, *Personnel Recovery*.
- z. JP 3-59, *Meteorological and Oceanographic Operations*.
- aa. JP 3-60, *Joint Targeting*.
- bb. JP 4-0, *Joint Logistics*.
- cc. JP 5-0, *Joint Operation Planning*.
- dd. JP 6-01, *Joint Electromagnetic Spectrum Management Operations*.

4. Multi-Service Publications

a. Army Tactics, Techniques, and Procedures 3-04.15/MCRP 3-42.1A/NTTP 3-55.14/AFTTP 3-2.64, *Multi-Service Tactics, Techniques, and Procedures for Unmanned Aircraft Systems*.

b. FM 3-01.15/MCRP 3-25E/NTTP 3-01.8/AFTTP 3-2.31, *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System*.

c. FM 3-52.1/AFTTP 3-2.78, *Multi-Service Tactics, Techniques, and Procedures for Airspace Control*.

d. FM 3-52.2/NTTP 3-56.2/AFTTP 3-2.17, *Multi-Service Tactics, Techniques, and Procedures for The Theater Air Ground System*.

e. FM 3-52.3/MCRP 3-25A/NTTP 3-56.3/AFTTP 3-2.23, *Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control*.

5. North Atlantic Treaty Organization Publications

a. Allied Administrative Publication-06, *NATO Glossary of Terms and Definitions (English and French)*.

b. Allied Joint Publication-3.3.5, *Allied Joint Doctrine for Airspace Control*.

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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: Joint Staff J-7, Deputy Director, Joint Education and Doctrine, ATTN: Joint Doctrine Analysis Division, 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 Air Force. The Joint Staff doctrine sponsor for this publication is the Director for Operations (J-3).

3. Supersession

This publication supersedes JP 3-52, *Joint Airspace Control*, 20 May 2010.

4. Change Recommendations

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

TO: JOINT STAFF WASHINGTON DC//J7-JED//

b. Routine changes should be submitted electronically to the Deputy Director, Joint Education and Doctrine, ATTN: Joint Doctrine Analysis Division, 116 Lake View Parkway, Suffolk, VA 23435-2697, and info the lead agent and the Director for Joint Force Development, J-7/JED.

c. When a Joint Staff directorate submits a proposal to the CJCS that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Services and other organizations are requested to notify the Joint Staff J-7 when changes to source documents reflected in this publication are initiated.

5. Distribution of Publications

Local reproduction is authorized, and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified JPs must be IAW DOD Manual 5200.01, Volume 1, *DOD Information Security Program: Overview, Classification, and Declassification*, and DOD Manual 5200.01, Volume 3, *DOD Information Security Program: Protection of Classified Information*.

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

c. JEL CD-ROM. Upon request of a joint doctrine development community member, the Joint Staff J-7 will produce and deliver one CD-ROM with current JPs. This JEL CD-ROM will be updated not less than semi-annually and when received can be locally reproduced for use within the combatant commands, Services, and combat support agencies.

GLOSSARY

PART I—ABBREVIATIONS AND ACRONYMS

AADC	area air defense commander
AADP	area air defense plan
AAR	air-to-air refueling area
ACA	airspace control authority
ACM	airspace coordinating measure
ACO	airspace control order
ACP	airspace control plan
ACS	airspace control system
ADM	air defense measure
AFTTP	Air Force tactics, techniques, and procedures
AIP	aeronautical information publication
AMD	air and missile defense
AO	area of operations
AOA	amphibious objective area
AOD	air operations directive
ARM	air reference measure
ATACMS	Army Tactical Missile System
ATC	air traffic control
ATCM	air traffic control measure
ATF	amphibious task force
ATO	air tasking order
AWACS	Airborne Warning and Control System
C2	command and control
CA	coordinating altitude
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CL	coordination level
CONOPS	concept of operations
COP	common operational picture
DCA	defensive counterair
DOD	Department of Defense
DSCA	defense support of civil authorities
EW	electronic warfare
FAA	Federal Aviation Administration (DOT)
FAAO	Federal Aviation Administration order
FEZ	fighter engagement zone
FM	field manual (Army)
FSCL	fire support coordination line
FSCM	fire support coordination measure

HIDACZ	high-density airspace control zone
HN	host nation
ICAO	International Civil Aviation Organization
IFF	identification, friend or foe
JEZ	joint engagement zone
JFACC	joint force air component commander
JFC	joint force commander
JOA	joint operations area
JP	joint publication
MCM	maneuver control measure
MCRP	Marine Corps reference publication
MDM	maritime defense measure
MEZ	missile engagement zone
MRR	minimum-risk route
NOTAM	notice to airmen
NTTP	Navy tactics, techniques, and procedures
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
ROE	rules of engagement
ROZ	restricted operations zone
SEAD	suppression of enemy air defenses
SIF	selective identification feature
SPINS	special instructions
TLAM	Tomahawk land-attack missile
TTP	tactics, techniques, and procedures
UA	unmanned aircraft
UAS	unmanned aircraft system

PART II—TERMS AND DEFINITIONS

airborne early warning. The detection of enemy air or surface units by radar or other equipment carried in an airborne vehicle, and the transmitting of a warning to friendly units. Also called **AEW**. (JP 1-02. SOURCE: JP 3-52)

air corridor. A restricted air route of travel specified for use by friendly aircraft and established for the purpose of preventing friendly aircraft from being fired on by friendly forces. (JP 1-02. SOURCE: JP 3-52)

air defense identification zone. Airspace of defined dimensions within which the ready identification, location, and control of airborne vehicles are required. Also called **ADIZ**. (JP 1-02. SOURCE: JP 3-52)

airmiss. None. (Approved for removal from JP 1-02.)

air route. The navigable airspace between two points, identified to the extent necessary for the application of flight rules. (JP 1-02. SOURCE: JP 3-52)

air route traffic control center. None. (Approved for removal from JP 1-02.)

airspace control. Capabilities and procedures used to increase operational effectiveness by promoting the safe, efficient, and flexible use of airspace. (Approved for incorporation into 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. SOURCE: JP 3-52)

airspace control order. An order implementing the airspace control plan that provides the details of the approved requests for airspace coordinating measures. Also called **ACO**. (Approved for incorporation into 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 operational area. Also called **ACP**. (JP 1-02. SOURCE: JP 3-52)

airspace control procedures. Rules, mechanisms, and directions that facilitate the control and use of airspace of specified dimensions. (JP 1-02. SOURCE: JP 3-52)

airspace control sector. None. (Approved for removal from JP 1-02.)

airspace control system. An arrangement of those organizations, personnel, policies, procedures, and facilities required to perform airspace control functions. Also called **ACS**. (JP 1-02. SOURCE: JP 3-52)

airspace coordinating measures. Measures employed to facilitate the efficient use of airspace to accomplish missions and simultaneously provide safeguards for friendly forces. Also called **ACMs**. (JP 1-02. SOURCE: JP 3-52)

airspace management. The coordination, integration, and regulation of the use of airspace of defined dimensions. (JP 1-02. SOURCE: JP 3-52)

airspace reservation. None. (Approved for removal from JP 1-02.)

air traffic controller. None. (Approved for removal from JP 1-02.)

airways station. None. (Approved for removal from JP 1-02.)

alerting service. None. (Approved for removal from JP 1-02.)

approach time. None. (Approved for removal from JP 1-02.)

automatic approach and landing. None. (Approved for removal from JP 1-02.)

base defense zone. An air defense zone established around an air base and limited to the engagement envelope of short-range air defense weapons systems defending that base. Also called **BDZ**. (Approved for incorporation into JP 1-02.)

carrier control zone. The airspace within a circular limit defined by 5 miles horizontal radius from the carrier, extending upward from the surface to and including 2,500 feet unless otherwise designated for special operations, and is under the cognizance of the air officer during visual meteorological conditions. (JP 1-02. SOURCE: JP 3-52)

controlled airspace. None. (Approved for removal from JP 1-02.)

control zone. A controlled airspace extending upwards from the surface of the Earth to a specified upper limit. (JP 1-02. SOURCE: JP 3-52)

coordinating altitude. An airspace coordinating measure that uses altitude to separate users and as the transition between different airspace control elements. Also called **CA**. (Approved for incorporation into JP 1-02.)

coordination level. A procedural method to separate fixed- and rotary-wing aircraft by determining an altitude below which fixed-wing aircraft normally will not fly. Also called **CL**. (Approved for inclusion in JP 1-02.)

flight information region. None. (Approved for removal from JP 1-02.)

flight information service. None. (Approved for removal from JP 1-02.)

high-density airspace control zone. Airspace designated in an airspace control plan or airspace control order in which there is a concentrated employment of numerous and varied weapons and airspace users. Also called **HIDACZ**. (Approved for incorporation into JP 1-02.)

identification, friend or foe. A device that emits a signal positively identifying it as a friendly. Also called **IFF**. (JP 1-02. SOURCE: JP 3-52)

identification maneuver. A maneuver performed for identification purposes. (JP 1-02. SOURCE: JP 3-52)

internal waters. None. (Approved for removal from JP 1-02.)

low-level transit route. A temporary corridor of defined dimensions established in the forward area to minimize the risk to friendly aircraft from friendly air defenses or surface forces. Also called **LLTR**. (JP 1-02. SOURCE: JP 3-52)

minimum-risk route. A temporary corridor of defined dimensions recommended for use by high-speed, fixed-wing aircraft that presents the minimum known hazards to low-flying aircraft transiting the combat zone. Also called **MRR**. (JP 1-02. SOURCE: JP 3-52)

near miss (aircraft). None. (Approved for removal from JP 1-02.)

penetration (air traffic control). None. (Approved for removal from JP 1-02.)

point defense. The defense or protection of special vital elements and installations; e.g., command and control facilities or air bases. (JP 1-02. SOURCE: JP 3-52)

positive control. A method of airspace control that relies on positive identification, tracking, and direction of aircraft within an airspace, conducted with electronic means by an agency having the authority and responsibility therein. (JP 1-02. SOURCE: JP 3-52)

procedural control. A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures. (JP 1-02. SOURCE: JP 3-52)

prohibited area. None. (Approved for removal from JP 1-02.)

radar advisory. None. (Approved for removal from JP 1-02.)

radial. None. (Approved for removal from JP 1-02.)

recovery. 1. In air (aviation) operations, that phase of a mission that involves the return of an aircraft to a land base or platform afloat. (JP 3-52) 2. The retrieval of a mine from the location where emplaced. (JP 3-15) 3. In personnel recovery, actions taken to

physically gain custody of isolated personnel and return them to friendly control. (JP 3-50) 4. Actions taken to extricate damaged or disabled equipment for return to friendly control or repair at another location. (JP 1-02. SOURCE: JP 3-34)

restricted areas (air). Designated areas established by appropriate authority over which flight of aircraft is restricted. (Approved for incorporation into JP 1-02.)

restricted operations area. None. (Approved for removal from JP 1-02.)

restricted operations zone. Airspace reserved for specific activities in which the operations of one or more airspace users is restricted. Also called **ROZ**. (Approved for inclusion in JP 1-02.)

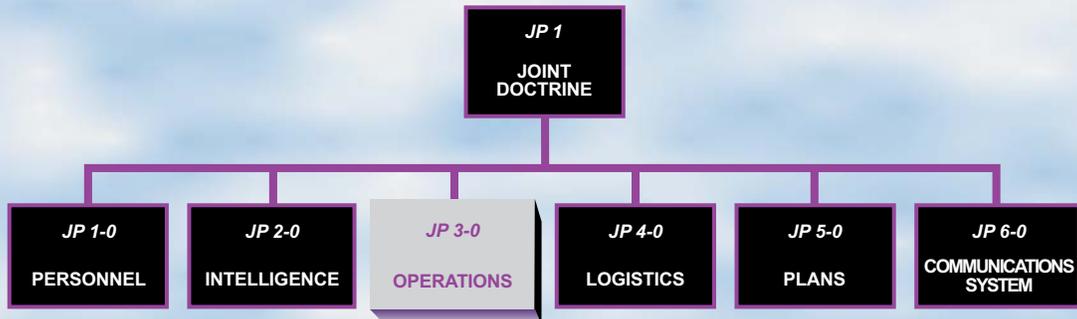
selective identification feature. A capability that, when added to the basic identification friend or foe system, provides the means to transmit, receive, and display selected coded replies. (JP 1-02. SOURCE: JP 3-52)

standard use Army aircraft flight route. Route established below the coordination level to facilitate the movement of Army aviation assets; it is normally located in the corps through brigade rear areas of operation and does not require approval by the airspace control authority. Also called **SAAFR**. (Approved for incorporation into JP 1-02.)

surveillance approach. None. (Approved for removal from JP 1-02.)

terminal control area. None. (Approved for removal from JP 1-02.)

JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint publications are organized into a comprehensive hierarchy as shown in the chart above. **Joint Publication (JP) 3-52** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:

