

ARMY, MARINE CORPS, NAVY, AIR FORCE

# JATC

## MULTI-SERVICE TACTICS, TECHNIQUES, AND PROCEDURES FOR JOINT AIR TRAFFIC CONTROL

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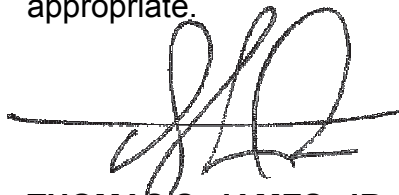
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MULTI-SERVICE TACTICS, TECHNIQUES, AND PROCEDURES

## FOREWORD

This multi-Service tactics, techniques, and procedures (MTTP) publication is a project of the Air Land Sea Application (ALSA) Center in accordance with the memorandum of agreement between the Headquarters of the Army, Marine Corps, Navy, and Air Force doctrine commanders directing ALSA to develop MTTP publications to meet the immediate needs of the warfighter.

This MTTP publication has been prepared by ALSA under our direction for implementation by our respective commands and for use by other commands as appropriate.



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and Joint Electronic Library Plus (<https://jdeis.js.mil/jdeis/index.jsp?pindex=0>).

# PREFACE

## 1. Purpose

This multi-Service tactics, techniques, and procedures (MTTP) publication for joint air traffic control (JATC) is a single source, descriptive reference guide to ensure standard procedures, employment, and Service relationships are used during all phases of air traffic control (ATC) operations. It also outlines how to synchronize and integrate JATC capabilities.

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Note: For the Army, the term “command and control” was replaced with “mission command.” Mission command now encompasses the Army's philosophy of command (still known as mission command) as well as the exercise of authority and direction to accomplish missions (formerly known as command and control).

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## 2. Scope

This MTTP publication supports planners and warfighters by establishing tactics, techniques, and procedures (TTP) for JATC, outlining its employment in a joint environment, and identifying specific Service ATC capabilities and limitations. This publication specifically addresses Service ATC doctrine, planning considerations, procedures, forces, and capabilities.

## 3. Applicability

This MTTP publication applies to all commanders and their staffs that participate in JATC operations. It is unclassified and approved for public release.

## 4. Implementation Plan

Participating Service command offices of primary responsibility will review this publication, validate the information and, where appropriate, reference and incorporate it in Service manuals, regulations, and curricula as follows:

**Army.** Upon approval and authentication, this publication incorporates the TTP contained herein into the United States (US) Army Doctrine and Training Literature Program as directed by the Commander, US Army Training and Doctrine Command (TRADOC).

**Marine Corps.**<sup>1</sup> The Marine Corps will incorporate the procedures in this publication in US Marine Corps training and doctrine publications as directed by the Deputy Commandant, Combat Development and Integration (DC, CD&I). Distribution is in accordance with the Marine Corps Publication Distribution System.

**Navy.** The Navy will incorporate these procedures in US Navy training and doctrine publications as directed by the Commander, Navy Warfare Development Command (NWDC)[N5]. Distribution is in accordance with *MILSTRIP/MILSTRAP Desk Guide*, Naval Supply Systems Command Publication 409.

**Air Force.** The Air Force will incorporate the procedures in this publication in accordance with applicable governing directives. Distribution is in accordance with Air Force Instruction 33-360.

## 5. User Information

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<sup>1</sup> Marine Corps PCN: 144 000055 00

- a. US Army Combined Arms Center; HQMC, DC, CD&I; NWDC; Curtis E. LeMay Center for Doctrine Development and Education (LeMay Center); and the Air Land Sea Application (ALSA) Center developed this publication with the joint participation of the approving Service commands. ALSA will review and update this publication as necessary.
- b. This publication reflects current joint and Service doctrine, command and control organizations, facilities, personnel, responsibilities, and procedures. Changes in Service protocol, appropriately reflected in joint and Service publications, will likewise be incorporated in revisions to this document.
- c. We encourage recommended changes for improving this publication. Key your comments to the specific page and paragraph and provide a rationale for each recommendation. Send comments and recommendations directly to:

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## **SUMMARY OF CHANGES**

ATP 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*.

This revision, dated December 2013:

- Updates chapters and appendices with current Service air traffic control doctrine, planning considerations, procedures, forces, and capabilities.
- Removes references to a “flyability check” and brings the publication in line with Federal Aviation Administration Order 8200.1.
- Deletes previous chapter III, “Air Traffic Control Interim Operations”, and retains the relevant data in chapters II, “Initial Deployment”, and III, “Sustainment of Air Traffic Control Operations”, and appendix E, “Service Air Traffic Control Credentials”.
- Changes chapter V, “Adaptive ATC Procedures”, to chapter IV, “Expeditionary Air Traffic Control Considerations”.
- Reorganizes appendices A, B, C, and D to standardize Service specific information.
- Deletes appendix E, “Air Traffic Control Equipment”.
- Adds Air National Guard information to appendix D, “Air Force Air Traffic Control”.
- Adds unmanned aircraft operations steps to the sample handover checklists in appendix F.
- Deletes appendices G, “Sample Notice to Airman”, and appendix H, “Sample Letters/Memorandum of Agreement”.

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**18 April 2014**

## **JATC**

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# **EXECUTIVE SUMMARY**

## **JATC**

This multi-Service tactics, techniques, and procedures (MTTP) publication for JATC establishes how to synchronize and integrate Service air traffic control (ATC) capabilities for planners in support of the joint force commander's objectives. The publication provides background information on the JATC operational elements of each Service's ATC force and provides a general understanding of how these forces fit into the flow of a developing theater. Service-unique information is highlighted for the planner to employ air traffic services in a joint environment.

### **Chapter I Planning**

Chapter I describes the command and control relationships for ATC organizations and includes a table of Service capabilities for ATC organizational tasking. In addition, the chapter details planning considerations with tailored options for providing instrument navigational aids and instrument procedures within an area of operations, in support of the operational commander.

### **Chapter II Initial Deployment**

Chapter II describes the employment of individual Service ATC capabilities in a joint environment. Of note, unlike flight operations where aircraft from several Services may share an airfield, ATC support is normally provided by a single Service. This chapter provides planning considerations for initial entry and a sample scenario showing potential ATC operations during the first 72 hours.

### **Chapter III Sustainment of Air Traffic Control Operations**

Chapter III highlights long-term ATC operations through termination of ATC services, including end-state considerations for synchronization, integration, and interoperability of ATC forces within an area of operations.

### **Chapter IV Expeditionary Air Traffic Control Considerations**

Chapter IV describes expeditionary ATC operations in support of the joint force commander's objectives. This chapter highlights creative and adaptive ATC procedures, within regulatory guidelines, to increase aircraft availability and survivability for the operational commander. These ATC procedures are not normally available in the National Airspace System; hence, they are not practiced during peacetime operations. The chapter provides examples of emergency landing surface operations and counter-rocket, artillery, and mortar integration. In addition, there are procedures for communications out/emission control airfield operations; reduced same runway separation; randomized aircraft arrivals/departures; and tactical aircraft arrival patterns during contingency operations.

### **Appendix A Army Tactical Air Traffic Services**

Appendix A provides details on the Army's tactical air traffic service mission, doctrine, capabilities, organization, and training and provides contact information for the Army Aviation Center of Excellence.

### **Appendix B Marine Corps Air Traffic Control**

Appendix B provides details on the Marine Corps' ATC mission, doctrine, capabilities, organization, training, and equipment and contact information for its ATC experts.

### **Appendix C Navy Air Traffic Control**

Appendix C provides details on the Navy's ATC mission, doctrine, capabilities, organization, training, and equipment and contact information for its ATC experts.

### **Appendix D Air Force Air Traffic Control**

Appendix D provides details on the Air Force's ATC mission, doctrine, capabilities, organization, training, and equipment and contact information for its ATC experts.

### **Appendix E Service Air Traffic Control Credentials**

Appendix E provides a comparison of Service ATC credentials for control tower and radar facilities.

### **Appendix F Sample Air Traffic Control Handover Checklists**

Appendix F provides two sample checklists for the handover of ATC operations.

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## Chapter I PLANNING

### 1. Background

- a. When planning for air traffic service (ATS) support requirements, it is essential for a joint planner to know the condition and capabilities of airfields, navigational aids (NAVAIDs), airspace, and other air traffic control (ATC) resources in the area of operations (AO). This information enables the joint force planner to determine the types and mix of assets required to support operational requirements.
- b. This chapter details command and control (C2) relationships for tasking Services to provide ATC capabilities, as well as planning considerations for conducting joint air traffic control (JATC).

### 2. C2 Relationships

- a. Relationships. The following guidance outlines duties and responsibilities during a joint operation.

(1) Joint Force Commander (JFC). A general term applied to a combatant commander, subunified commander, or joint task force (JTF) commander authorized to exercise combatant command (command authority) or operational control over a joint force. (Joint Publication [JP] 1, *Doctrine for the Armed Forces of the United States*) In addition, the JFC exercises operational control (OPCON) over assigned forces, and normally over attached forces, to include ATC forces. The JFC directs employment of ATC assets and handoff of responsibility from one unit to another (single Service, joint, multinational, or host nation [HN]) through the airspace control plan (ACP), published by the airspace control authority (ACA). Additionally, the JFC establishes liaison requirements for Service, joint, multinational, and HN facilities.

(2) Joint Force Air Component Commander (JFACC). The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for recommending the proper employment of assigned, attached, or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. (JP 3-0, *Joint Operations*)

(3) ACA. The commander designated to assume overall responsibility for the operation of the airspace control system (ACS) in the airspace control area. When the JFC designates a JFACC, the JFACC normally designates the JFACC as the area air defense commander (AADC) and ACA because the three functions are integral to one another. The ACA is responsible for planning, coordinating, and developing airspace control procedures and operating the ACS. (JP 3-52, *Joint Airspace Control*). The objectives of airspace control procedures include preventing mutual interference, facilitating air defense identification, safely accommodating and expediting air traffic flow in the area of responsibility/joint operations area, enhancing effectiveness in accomplishing the JFC's objectives, and preventing fratricide. Broad responsibilities include coordinating and integrating the airspace control area, establishing an ACS, and

developing the ACP and implementing it through the airspace control order (ACO). Additionally, the JFACC should coordinate with International Civil Aviation Organization (ICAO)/HN authority to plan for, and ensure deconfliction of, flights by civilian aircraft near or within the combat zone. This coordination is critical to enhance aviation safety for military aircraft and aircraft from humanitarian assistance and other international organization/non-governmental organization (NGO) sponsored flights. The ACA promulgates JFC requirements, plans, and tasks for ATC units through the ACP and ACO (see a discussion on ACP and ACO in paragraph c.).

(4) Joint Air Operations Center (JAOC). A jointly staffed facility established for planning, directing, and executing joint air operations supporting the JFC's operation or campaign objectives. (JP 3-30, *Command and Control for Joint Air Operations*)

(5) Service Component Command. A command consisting of the Service component commander and all those Service forces, such as individuals, units, detachments, organizations, and installations under that command, including the support forces assigned to a combatant command (CCMD) or further assigned to a subordinate unified command or JTF. (JP 1) The Service component command retains the responsibility to make recommendations to the JFC on employment of component forces, to include ATC units.

(6) Senior Airfield Authority (SAA). An individual designated by the JFC at a joint base to be responsible for the control, operation, and maintenance of an airfield to include runways, associated taxiways, parking ramps, land, and facilities whose proximity directly affects airfield operations. The SAA ensures unity of effort among the various commands and other activities operating on the airfield and serves as the arbitrator between competing interests on the airfield. Depending on the types of air operations being conducted at a specific airfield, the SAA will normally be selected from one of the following commands: Army aviation battalion or brigade; Marine aircraft squadron or group; Air Force squadron, group, or wing, contingency response element/group (CRE/CRG), air mobility squadron, or Special Operations Command special tactics squadron. The SAA is responsible for overall effectiveness of the airfield and coordination of all requirements for use of the airfield and its facilities. The SAA controls airfield access and coordinates for airfield security with the joint security coordinator for the area. (JP 3-17, *Air Mobility Operations*)

(7) Component Liaison Elements. The component liaison elements to the JFACC (e.g., the special operations liaison element, battlefield coordination detachment, naval and amphibious liaison element, and the Marine liaison officer) may also provide representation to the ACA, if the JFACC has been designated the ACA by the JFC or is collocated in the JAOC.

b. ATC Unit. This unit provides ATC services to aircraft operating within airspace defined in the ACP. The unit develops local operating procedures in accordance with applicable ICAO, Federal Aviation Administration (FAA), HN, Service specific and joint directives; the ACP, air tasking order (ATO), ACO, and other ACA and JFC instructions. The unit is also responsible for identifying and coordinating

communication links with the theater air ground system, as well as C2 agencies, to include air defense and fire support elements, to ensure identification criteria are useable and understandable and are implemented in accordance with standing joint force directives. The ATC unit establishes procedures for interoperability with adjacent, subordinate, and superior components; and joint, coalition, and HN ATC facilities.

c. JFC Products. The following JFC-approved products supplement the guidance contained in ICAO, FAA, HN, Service, and JATC procedures:

(1) ACP. The document approved by the JFC that provides specific planning guidance and procedures for the ACS for the joint force operational area (JP 3-52). The ACA develops a specific ACP to synchronize and integrate air activities with the JFC's overall operational plan. The plan must consider multinational operations, as well as the need for developing policies and procedures to ensure compatibility and interoperability of support systems and methods to accommodate potential alliances and coalitions. One broad area of concern for developing the ACP is familiarity with capabilities and procedures of military and civil ATC systems. The ACP establishes initial ATC system structure, outlines procedures for transition from peacetime to wartime ATC operations (if required), and details procedures for handing off ATC responsibility from one ATC unit to another (if required). The ACP should provide procedures to integrate the resources of the military ATC facility responsible for terminal-area airspace control. ATC facilities should interface and link with ACS communications to ensure the safe and efficient flow of air traffic supporting the combat effort while permitting maximum combat flexibility.

(2) ACO. An order implementing the ACP that provides the details of the approved requests for airspace coordinating measures (ACMs). It is published either as part of the ATO or as a separate document. (JP 3-52)

(3) Special Instructions (SPINS). SPINS provide details of the approved requests for special ACM. It is published either as part of the ATO or as a separate document.

(4) Aeronautical Information Publication. A publication issued by or with the authority of a state and containing aeronautical information of a lasting character essential to air navigation. It contains thorough details of regulations, procedures, and other information pertinent to flying aircraft within a particular country.

(5) Area Air Defense Plan. The AADC's planned integration of active air defenses, passive defensive measures, and C2 systems to provide a comprehensive approach to air defense. The plan should be closely integrated with the ACP through the ACA.

### **3. Planning Considerations**

a. Commanders across the Services should determine the ATC capabilities and forces required, arrival sequence, and HN and adjacent nation restrictions to plan ATC operations. The ACA will need expertise from Service ATC representatives and HN liaison elements for coordination with all relevant agencies. Consider the following critical factors during the planning phase to enable an effective ACS:

(1) Plan for the full range of ATC operations to support deliberate and crisis action planning for deployment, employment, sustainment, and redeployment of forces. Specifically, consider the following:

- (a) Length of operation.
  - (b) Size of the air base (i.e., forward operating base, main air base, air facility, air site, and air point).
  - (c) Complexity of the area (such as, the mixture and volume of existing civilian structures, services, NAVAIDs, and runways' condition).
  - (d) Type and density of traffic (i.e., rotary wing, fixed-wing, unmanned aircraft [UA] operations).
  - (e) Primary users (e.g., special operations forces, fighters, cargo transporters, other governmental agencies, coalition forces, or humanitarians).
  - (f) Type of service.
    - Instrument flight rules (IFR) and visual flight rules (VFR).
    - Radar or non-radar.
    - Terminal.
    - Single or multiple precision/non-precision approaches.
    - En route control.
  - (g) Personnel requirements (i.e., qualifications, liaisons, and translators).
  - (h) Equipment reliability, back-up capability, and connectivity.
  - (i) Disposition of base (e.g., a base that transitions to different use with different Service and equipment requirements).
  - (j) Environment (i.e., permissive, non-permissive, terrain, climatology, visual or instrument meteorological conditions, winds, temperature, or density altitude).
  - (k) Threats and force protection.
  - (l) Interface between terminal and en route ATC systems.
  - (m) Base operations support (i.e., power, supply, maintenance, billeting, medical, and provisions).
  - (n) Aircraft operation restrictions near munitions storage.
  - (o) Frequency requirements for radio, radar, and NAVAIDs.
  - (p) Airfield lighting requirements.
- (2) Coordinate HN integration of the civil ATC system, including agreements for national and international air traffic coordination and negotiation of international level agreements.
- (3) Coordinate with adjacent C2 agencies to establish procedures for control hand-offs, reference points, and ATC sharing. Utilize letters of agreement or memoranda of understanding to record airspace management and control decisions.



- (4) Collaborate with JAOC combat plans division to integrate airspace design into the development of the ACP.
- (5) Coordinate terminal instrument procedures (TERPS) for theater airfields, including airfield and environmental obstacle surveys, deployable ATC packages, and landing systems. Review pre-existing airfield surveys, HN coordination, or HN or commercial instrument procedures for suitability and Department of Defense (DOD) approval.
- (6) Coordinate flight inspections, as required. If instrument NAVAIDs and IFR procedures are necessary to meet mission objectives, the following two areas are required:

(a) TERPS. TERPS specialists (Marine, Army, Air Force, and National Geospatial Intelligence Agency) participate, when warranted or requested, in initial NAVAID site surveys. TERPS specialists can assist in placing deployable NAVAIDs used in developing instrument procedures and can forward site survey data to the appropriate higher headquarters' TERPS office that is responsible for the operational area. Authorization to use the procedures remains with the appropriate flying operations authority and the commander exercising OPCON of the aircraft. During contingency operations, an in-theater TERPS specialist should develop and approve instrument procedures and schedule flight inspections. Flight inspections verify the performance of air navigation services and ensures their associated instrument flight procedures conform to prescribed standards documented in FAA, DOD, and Annex 10 of the Convention on ICAO directives. In accordance with Service regulations, flight inspections must be performed during daylight hours and require visual meteorological conditions weather. Inspection of a single NAVAID normally takes half a day and one sortie to complete. The following four options are available to the JFACC (listed from higher to lower risk).

- Option 1. Approval Without FAA Flight Inspection. Commanders have the final authority and responsibility for accomplishing their assigned mission. If the military situation dictates and a Service allows using an installed NAVAID and approach without a flight inspection (see the note following Option 4), this authorization is restricted to aircraft under the individual Service approval authority's OPCON and should normally be annotated with specific flying units use only (e.g., "For Use By [specific unit] Aircraft Only").
- Option 2. Military Contingency Flight Inspection. The appropriate flying operations authority and commander exercising OPCON of the aircraft may approve an abbreviated flight inspection for radar approaches and certain new instrument procedures in accordance with FAA Order 8200.1C, chapter 24, *Military Contingency Flight Inspection*. This inspection will allow a commander to have temporary IFR capability for aircraft under the direction of the JFC.
- Option 3. Restricted Facility Commissioning. This inspection certifies the NAVAID and instrument approach using normal procedures to the extent

necessary to support a minimal number of IFR approach procedures in accordance with FAA Order 8200.1C, *United States Standard Flight Inspection Manual* (also identified as Technical Manual (TM) 95-225, Naval Air Systems Command (NAVAIR) 16-1-520, and Air Force Manual (AFMAN) 11-225). The restricted facility commissioning inspection permits use by any aircraft. Areas evaluated as acceptable are certified for use, and the remaining areas and procedures are restricted. The local (deployed) AO or ATC manager will publish the restrictions in an appropriate Notice to Airmen.

- Option 4. Normal Commissioning. This is the full certification of all procedures (i.e., arrival, approach, and departure) and areas of NAVAID coverage in accordance with FAA Order 8200.1C/TM 95-225/NAVAIR 16-1-520/AFMAN 11-225. Each Service will submit all instrument procedure certifications through the appropriate chain of command. Once complete, the procedures and airspace are certified to support all aircraft assigned to the JFC (i.e., DOD, civil, HN, coalition forces, etc.) as well as aircraft transiting through en route airspace.

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Note: Options 1 and 2 are available when a flight inspection is impossible or limited. They do not eliminate the requirement to conduct a flight inspection. The flight inspection requirement is postponed only until circumstances permit inspection in accordance with Options 3 or 4.

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(b) Distribution of Approaches. Service ATC units will route completed procedures to the JFACC for distribution throughout the AO.

(7) Coordinate with ICAO, civil ATC authorities, and NGOs/private volunteer organizations for integrating humanitarian air missions.

b. Service component ATC capabilities vary in employment, organization, and mission profile. Due to these variations, unique ATC skills are focused within individual Service components to meet individual Service requirements. Integrating JATC services lends itself well to operational environments (airfields or assault zones) where joint operations persist. Planning multi-Service ATC support to joint operations builds on the combat effectiveness of the individual ATC units and should remain as a planning mechanism. Specific Service capabilities are shown in table 1.

Table 1. Service ATC Capabilities									
Service	Air Traffic Control (ATC) Capabilities								
	TERPS Site Survey	TERPS	Airfield Survey	Day/Night VFR <sup>3</sup>	Tactical Airfield Lighting	Limited IFR Services <sup>3</sup>	Full IFR Services <sup>3</sup>	PAR	Airfield Mgmt
<b>Air Force</b>									
STT			X <sup>1</sup>	X	X <sup>10</sup>	X <sup>5</sup>			X <sup>6,8</sup>
Combat Communications			X <sup>1</sup>	X			X	X <sup>7</sup>	X <sup>4</sup>
MAJCOM/Fixed Base <sup>9</sup>				X		X	X	X <sup>7</sup>	X
Air National Guard	X	X	X	X		X	X	X <sup>7</sup>	X
CRE	X		X	X		X			X
<b>Army</b>									
	X	X	X	X	X <sup>10</sup>	X	X	X	X
<b>Marine Corps</b>									
Marine ATC Detachment	X	X	X	X	X <sup>10</sup>	X	X	X	X
MMT	X		X <sup>1</sup>	X	X <sup>10</sup>	X <sup>5</sup>			X <sup>6</sup>
<b>Navy</b>									
		X		X <sup>2</sup>		X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>	X <sup>8</sup>
<p>Notes:</p> <p><sup>1</sup> Basic airfield survey done during initial entry phase, which is not a formal site survey and cannot be used to gather data for TERPS certified approaches.</p> <p><sup>2</sup> Primarily provide ATC services to aircraft supporting the carrier/expeditionary strike group. Tactical air control squadrons are capable of temporarily staffing (or augmenting) and operating shore-based ATC facilities.</p> <p><sup>3</sup> Requires tactical airfield lighting or operative host nation lighting. If neither is available, aircrew night vision device systems are required.</p> <p><sup>4</sup> Airfield management services at austere locations may be provided by a CRE.</p> <p><sup>5</sup> Limited to TACAN systems. No approach control or PAR functions. May be limited to non-radar operations that may hamper operational tempo.</p> <p><sup>6</sup> Limited to tactical airfield markings, lighting, runway surveillance, and landing surface evaluations.</p> <p><sup>7</sup> Air Force PAR controllers require SEI 365 and must be tasked to ensure qualified controllers are deployed.</p> <p><sup>8</sup> Air Force airfield management personnel are tasked by the same command authority as ATC personnel. Navy controllers are qualified in both specialties.</p> <p><sup>9</sup> Fixed-base unit type codes consist of personnel that normally join Air Force combat communications equipment in the forward area or may be tailored via TPFDD to work in host nation or inter-Service facilities.</p> <p><sup>10</sup> STT, MMT and Army TACTs carry man portable, battery operated, short duration, airfield lighting (all others require tactical lighting systems or operational host nation systems).</p> <p>Legend:</p> <p>CRE—contingency response element                      STT—special tactics team</p> <p>IFR—instrument flight rules                              TACAN—tactical air navigation</p> <p>MAJCOM—major command                              TACT—tactical aviation control team</p> <p>Mgmt—management                                      TERPS—terminal instrument procedures</p> <p>MMT—Marine air traffic control mobile team      TPFDD—time-phased force and employment data</p> <p>PAR—precision approach radar                      VFR—visual flight rules</p> <p>SEI—special experience identifier</p>									

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## **Chapter II**

# **INITIAL DEPLOYMENT**

### **1. Background**

This chapter describes how individual Services' ATC capabilities are initially employed in the joint environment. Although aircraft from several Services may share an airfield, ATC support at the airfield is usually provided by one Service. However, some locations may require a combination of Service ATC personnel and equipment to support a mission. Planners may need to consider more than one Service ATC unit due to manning, equipment, and mission requirements.

### **2. Initial Entry Planning**

a. Initial planning considerations should determine whether to use ATC elements ashore or use the ATC capabilities of an off-shore naval vessel during phasing control ashore. If phasing is required, the options include an amphibious operation, aerial insertion, or mounted assault from land. Initially, specialized ATC units such as an Air Force special tactics team (STT), a Marine air traffic control mobile team (MMT), a full Marine ATC detachment, or an Army tactical aviation control team (TACT) may require an initial deployment assessment, preferably on-site. Once the designated authority completes the assessment, planners determine the required initial ATC force mix. Planners should be aware that full end state airfield operations and ATC services may not be available until sustainment ATC forces arrive. Small, lightweight, minimum capability, highly mobile packages will provide initial VFR or limited IFR ATC. As a planning factor, airborne deployable fighting forces will normally deploy during the initial phases of a crisis with their supporting ATC units and enough food, water, and shelter for self-sufficient operations for approximately 72 hours.

b. The initial entry phase normally ends when transition ATC forces deploy to provide a more robust airfield capability. Sustainment forces are tailored to support the mission at that airfield. Requirements of higher priority forces may delay arriving sustainment ATC assets. These delays may restrict the operational tempo of aircraft and affect flight safety. The joint planner should balance the size and logistical footprint of the sustainment force against the need for air traffic services at the specific airfield.

### **3. Initial Entry Operations**

a. General. For this publication and the timeline demonstration scenario, initial entry is defined as military actions required to land forces with inter- or intra-theater lift capability to meet the JFC's strategic or operational objectives. Initial entry starts with deployment of ATC assets into an airfield (opposed or unopposed). The deployment could be accomplished using surface, amphibious, airborne, or heliborne operations.

b. Service Capabilities. The Army, Marine Corps, and Air Force can provide a standalone or joint initial airfield ATC capability. (The Navy supports expeditionary operations ashore with individual ATC augmentees integrated into Marine

expeditionary unit [MEU] MMTs.) Initial ATC forces are small, uniquely specialized teams that may be required for follow-on operations. Consequently, these initial ATC forces are normally available for short duration and require follow-on sustainment. For planning purposes, short duration is less than 14 days. If not replaced, augmentation may be required within 30 days to support higher tempo operations. Table 2 shows a notional timeline for initial stand-up of an ATC capability at a bare-base airfield.

<b>Table 2. Notional Timeline for Initial ATC Capability</b>									
<b>Scenario: Establish an IFR-capable Airfield for Airlift</b>									
ATC Services/Actions	Timeline								
	D-72 to 12 Hours	H Hour	1 Hour	TBD	5-12 Hours	12-24 Hours	24 Hours	48 Hours	72-96 Hours
Initial Forces (STT, MMT, and TACT) Alerted	X								
Gather Intel	X								
Forces Deploy/Employ		X							
Airfield Seizure		X							
Airfield Assessment, Communications Established			X						
Marking/Lights, NDB, ATNAVICS, and man-portable TACAN Operational			X						
Airfield Ready to Receive Traffic			X						
Airfield Secure with Light Hostilities				X <sup>1</sup>					
Initial day/Night VFR ATC Begins				X <sup>1</sup>					
TERPS Information Forwarded					X				
NAVAIDs/ATNAVICS/Procedures Flight Inspection Completed						X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>	
Air Force CRG/CRE/USMC MWSS Arrives							X		
Airlift Additional ATC Forces/Equipment							X		
Air Force CRG/CRE/USMC MWSS Operational								X	
Preliminary Instrument Approaches Approved						X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>
Limited IFR Services Available						X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>	X <sup>2</sup>
<sup>1</sup> Determined jointly by force commander, jointly with JFACC, or as otherwise prescribed. <sup>2</sup> Risk acceptance, military contingency flight inspection, or FAA flight inspection required.									
<b>Legend:</b> ATC—air traffic control ATNAVICS—air traffic navigation, integration, and coordination system CRE—contingency response element CRG—contingency response group FAA—Federal Aviation Administration IFR—instrument flight rules JFACC—joint force air component commander MMT—Marine air traffic control mobile team MWSS—Marine wing support squadron NAVAIDs—navigational aids NDB—nondirectional (radio) beacon STT—special tactics team TACAN—tactical air navigation TACT—tactical aviation control team TBD—to be determined TERPS—terminal instrument procedures USMC—United States Marine Corps VFR—visual flight rules									

c. Initial ATC Scenario. Using the timeline presented in table 2, joint planners may leverage ATC capabilities to form a JATC package. While each Service normally

provides ATC service as an enabler to their combat capabilities, some interdependencies may be capitalized upon to better enhance force projection. The following scenario is a notional representation for establishing ATC services at a high operational tempo airbase capable of handling a mix of large and small wing aircraft.

(1) H-Hour. Army or Marine infantry forces seize an airfield, accompanied by initial ATC forces, and establish preliminary security/force protection. Initial ATC forces (Air Force STT, United States Marine Corps [USMC] MMT, Navy tactical air control squadron, or Army ATS company) will begin to provide basic ATC services with NAVAIDs to guide aircraft in inclement weather. Teams complete initial airfield assessments to provide the JFC with options for available airfield services. Portable lighting and preliminary airfield markings are completed.

(2) H-Hour+24. Tailored airfield operations personnel (CRG, CRE, airfield operations battalion [AOB], or MWSS [Marine wing support squadron]) arrive and begin to improve airfield services. Additional personnel arrive with more capabilities (e.g., air traffic navigation, integration, and coordination system [ATNAVICS], USMC remote landing site tower, or NAVAIDs). ATC personnel begin to consolidate ATC capabilities, including tower and radar (arrival and departure control, limited approach control, and precision approach radar). The CRG, CRE, AOB, or MWSS establishes limited airfield management. Security forces from the initial assault package assume force protection and airfield security responsibilities.

(3) H-Hour+72-96. The CRG, CRE, AOB, or MWSS provide airfield support services. Air Force deployable ATC and landing system or Marine ATC detachment assume ATC services with a full radar approach control (RAPCON) and tower capability. Army ATS units can continue ATC services with ground controlled approach (GCA), mobile control tower, and airspace information center (AIC) capabilities.

(4) D+3 and beyond. The CRG, CRE, AOB, or MWSS continue to provide airfield support. Air Force or USMC ATC continues to provide RAPCON and tower services or Army ATS company provides GCA, tower, and AIC services. With expanded communications and dedicated airfield C2 in place, determination for future ATC and airfield sustainment force requirements are made.

d. General Capabilities. All Services have initial ATC communication deployment capabilities. However, initially, deployed systems may limit capabilities. These systems are directly linked to specific aircraft capabilities such as the tactical air navigation (TACAN) and nondirectional (radio) beacon (NDB). The USMC MMT and Air Force STT have packable or portable airfield lighting systems, allowing them to provide a complete initial airfield-operating package. Coordination is required to layout the deployed tactical airfield lighting and marking patterns among the initial ATC unit and follow-on aircrews to ensure the arriving aircrews have the equipment and familiarity with the set marking patterns. (Reference Air Force Instruction 13-217, or MMT tactical standard operating procedures.)

(1) Force replacement or augmentation should occur in accordance with the operational plan for initially-deployed ATC forces. Durations exceeding 30 days

require more detailed planning if the base infrastructure cannot support sustained ATC operations. Contingency planners should be aware Air Force and Marine ATC transition packages require significant airlift assets and will need appropriate priority in the equipment flow or time-phased force and deployment data. If initial entry forces need airport surveillance radar (ASR) or precision approach radar, the Army and USMC ATNAVICS radar and C2 systems are the most compact and capable for early deployment. On initial entry, Army ATC forces can provide VFR (tower) and IFR NDB airfield operations. USMC ATC forces can provide VFR (tower) and IFR TACAN operations.

(2) Table 3 provides a quick reference of initial individual Service capabilities.

<b>Table 3. Initial Joint ATC Capabilities</b>							
Service	Voice Communication			Deployable NAVAIDs	Runway Lighting	Visual Flight Rules	Limited Instrumented Flight Rules
	VHF (Secure)	UHF (Secure)	FM (Secure)				
Army	Yes	Yes	Yes	NDB	Yes*	Yes	Yes
Air Force	Yes	Yes	Yes	TACAN	Yes	Yes	Yes
Marine Corps	Yes	Yes	Yes	TACAN	Yes	Yes	Yes
Legend: FM—frequency modulation NAVAIDs—navigational aids NDB—nondirectional (radio) beacon TACAN—tactical air navigation UHF—ultra high frequency VHF—very high frequency							
*The Army has portable lighting to support Army operations with limited joint application due to joint runway length requirements.							

#### 4. Transition to Sustained Operations

Transitioning to sustained operations may require additional personnel and equipment to supplement the initially deployed capabilities, such as providing a positive control IFR or dual runway precision approach capability. During this transition, ATC will have some interim capacity as operations progress to full capability. The sustained operations plan should consider requirements for full base airfield operations support over an extended period. A full range of terminal services, including mobile control tower, ASR, precision landing capabilities, NAVAIDs, and transmission medium equipment, are normally required for the sustained operations phase. Chapter III identifies planning considerations for sustained operations.

#### 5. Example of Air Traffic Control Transition

The following scenario illustrates the gap between an initial entry force and sustaining ATC force given a medium threat with instrument meteorological conditions. For discussion purposes, the initial entry force has conducted a forced entry, secured the airfield, and established limited instrument approach procedures (USMC MMT, Air Force STT, or Army TACT could accomplish this). The objective is to eventually land inter-theater airlift aircraft and conduct operations until sustainment forces assume responsibility for the airfield.

- a. The planners have identified an operational need to temporarily use an airfield's instrument procedure without a flight inspection. This is accomplished using flight inspection option 1 described in chapter I.



b. Sustainment forces begin arriving within three to seven days and immediately begin the transition to assume ATC responsibility. The following occurs simultaneously (airflow dependent):

- (1) New controllers are integrated into the initial ATC force's work shifts. Immediately, these personnel are familiarized and certified in required ATC positions by existing controllers.
- (2) ATC management personnel gather required information to assume duty.
- (3) Sustainment ATC and landing systems are sited and set up.
- (4) Additional instrument procedures are built and all procedures and NAVAIDs are certified for IFR use by flight inspection.

c. Transition continues through D+12 as the initial controller force is replaced with new controllers. At D+13, enough sustainment controllers are locally certified to meet ATC mission requirements and personnel from both forces agree on a final transition date of D+14. Initial ATC forces redeploy and reconstitute for follow-on missions.

## **6. Additional Considerations**

a. Integration and Interoperability. ATC systems are highly complex and are designed as stand-alone systems with limited connectivity. Planners must first identify what systems may be in place and what capabilities are required. The key to solving integration and interoperability issues lies within each Service.

b. Additional Issues. Some additional issues to consider when providing resources for a transition force include planner's checklists and Service credentialing. FAA regulations govern ATC certification and each Service is responsible to administer its certification and rating program in accordance with applicable FAA orders. But since each Service has unique requirements and training programs, certification credentials may vary among Services. Normally, differences within the Services are apparent in experience levels, technical qualifications, and supervisory training requirements. Consult ATC leadership to verify appropriate ATC needs at specific locations.

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## **Chapter III**

# **SUSTAINMENT OF AIR TRAFFIC CONTROL OPERATIONS**

### **1. Background**

Sustained ATC operations are defined as those operations in which ATC forces have achieved the desired operational capability and continue until terminated. Sustained ATC operations can occur through multiple venues: continuous military rotation, contracted service support, or by returning services to HN responsibility. Of note, returning services to HN responsibility may still require US oversight, assistance, or support. Establishing a sustainable ATC capability requires significant planning to ensure appropriate resources are available to meet the JFC's requirements. Sustainment of airfield operations requires long-term ATC support.

### **2. Sustained Operations Phase**

- a. Service capabilities. Services can provide VFR and IFR service to all aircraft through mobile control towers, radar systems, and communications connectivity. Air Force and Marine ATC sustainment equipment provide complete ATC service to support a theater airbase mission but requires extensive airlift to deploy. Navy shipboard systems, with their inherent resupply and embarked maintenance, are only limited by the ship's ability to remain on station and to maintain the operational health of its systems. The Army provides complete service, except approach control.
- b. Synchronization. Equipment availability and support requirements are key planning factors in determining the airfield and ATC requirements. Replacement parts and trained maintenance technicians are Service specific and often equipment specific. Sustainable ATC operations require in-place base support (e.g., power, supply, communications, and force protection personnel). Setup time may vary from hours to days, depending on the weather, equipment deployed, and functional check flights.
- c. Integration. If multi-Service flight operations are planned, Service ATC augmentation and integration may be required. Additionally, while English is the international aviation language, ATC units may require a HN language-qualified individual.
- d. Interoperability. Current deployable ATC systems of one Service may not be fully compatible with those of other Services, but some equipment (e.g., landlines and radios) may be suitable for inter-facility voice communications.

### **3. Enabling Civil Authority**

- a. During the enabling civil authority phase of military operations, emphasis is placed on restoring HN jurisdiction and airspace control following the operation. This phase also reestablishes the HN infrastructure and prepares the forces for redeployment. Progressively, transfer control of airfields, airspace, and air control to the HN airspace authority. Service ATC units will continue to provide airspace information and terminal services to aid in the safe, orderly, and expeditious flow of air traffic until the HN can assume all ATC responsibilities. However, some airfields

may require complete termination of operations due to HN inability to assume ATC responsibilities.

b. When an ATC agency receives a request to transfer control of airspace, the agency should consider the following:

(1) Verification of the Ordering Authority. Ordering authority to transfer airspace rests with the ACA or CCMD, not with the using agency. Use the following procedures to verify the ordering authority:

(a) Advise the chain of command.

(b) Verify the requesting agency was properly authorized.

(c) Commanders should consult civil affairs, the pertinent judge advocate, and US State Department to further verify a valid turnover request.

(2) Identification of Receiving Agency. Establish what agency receives the airspace. This may range from the HN airspace authority to another military Service. Consider the personnel and equipment that will be transferred or loaned to the HN or Service during the transfer period, along with associated costs.

(3) Consultation with Affected Agencies. Agencies and organizations with established procedures require notification of an impending transfer. Examples of agencies requiring coordination include aviation units, fire support elements, air defense agencies, intelligence organizations, and multinational forces.

(4) Identification of the Date of Transfer. Knowing the expected date and time of transfer is critical to executing a workable plan to accomplish the transfer. Identifying the key elements of the transfer plan and liaisons with the transfer authority will minimize delays and expedite the handover.

#### **4. End of Operations**

a. Planning Considerations. Planning for the transition back to civil ATC services or military ATC operation cessation should begin early and be continuously updated. As early as possible, coordinate with ICAO, NGO, and JFC planners to restore or contract ATC services to relieve military ATC units. The ICAO should survey the airfield and ATC facility infrastructure to determine if improvements are needed to ensure these facilities will meet ICAO standards and recommended practices.

b. Continued Responsibility. The sustained operations phase may not end when military ATC personnel and equipment are completely redeployed. With HN or contracted services, the joint force may still have responsibility for oversight, quality assurance evaluation, procedures review, and HN agreements. The sustained operations phase ends when the JFC determines the mission is complete and responsibility is transferred.

c. Draw Down. Draw down of operations may require reversing the buildup process, including a second deployment of initial entry ATC assets who are able to operate without base support (e.g., Marine MMT, Army TACT, Air Force STT) to allow for joint force withdrawal. End of operations will require a handover or phase-out of ATC services. Then, units may deploy ATC equipment to another location, to home station, or transfer it to the HN as determined by higher authority.

## Chapter IV

# EXPEDITIONARY AIR TRAFFIC CONTROL CONSIDERATIONS

### 1. ATC Operations

a. ATC operations during expeditionary military operations require tactical-level procedures to provide a unity of effort supporting the JFC. Operational success is achieved by integrating air assets from across the Services.

b. ATC units must remain operationally creative, within regulatory guidelines, to ensure the full range of capability is available to support the JFC. For example, in the event a landing surface or airfield service becomes unavailable, airfield managers and ATC personnel may have to use an alternate means relative to normal peacetime operations in the national airspace system. Consider the following expeditionary ATC procedures during tactical operations:

(1) Emergency Landing Surface Operations. Airfield operations may experience loss of the primary landing surface due to an unplanned event (e.g., dual barrier engagement or enemy action). Emergency landing surface procedures should be developed to ensure continuous airfield operations supporting the joint force.

Table 4 outlines some considerations when using an alternate surface.

<b>Table 4. Considerations When Using a Taxiway as an Alternate Runway</b>
Accomplish the following prior to using a taxiway as an alternate runway: <ul style="list-style-type: none"><li>• Obtain appropriate command approval.</li><li>• Coordinate with airfield management and the tower supervisor.</li><li>• Move all arming and de-arming areas at least 50 feet from the alternate runway.</li><li>• Have ground control direct taxiing aircraft to clear the taxiway and hold all others in parking areas.</li><li>• Visually, clear the taxiway.</li></ul> Other considerations: <ul style="list-style-type: none"><li>• This is only for daylight operations or time-critical missions.</li><li>• It is only for straight-in approaches.</li><li>• There may be a displaced threshold.</li><li>• There may be obstructions near the taxiway.</li><li>• A taxiway is narrower than a runway.</li><li>• There is usually a rapid deterioration of the taxiway's surface.</li><li>• Taxiway lighting and markings are different than for a runway.</li></ul>

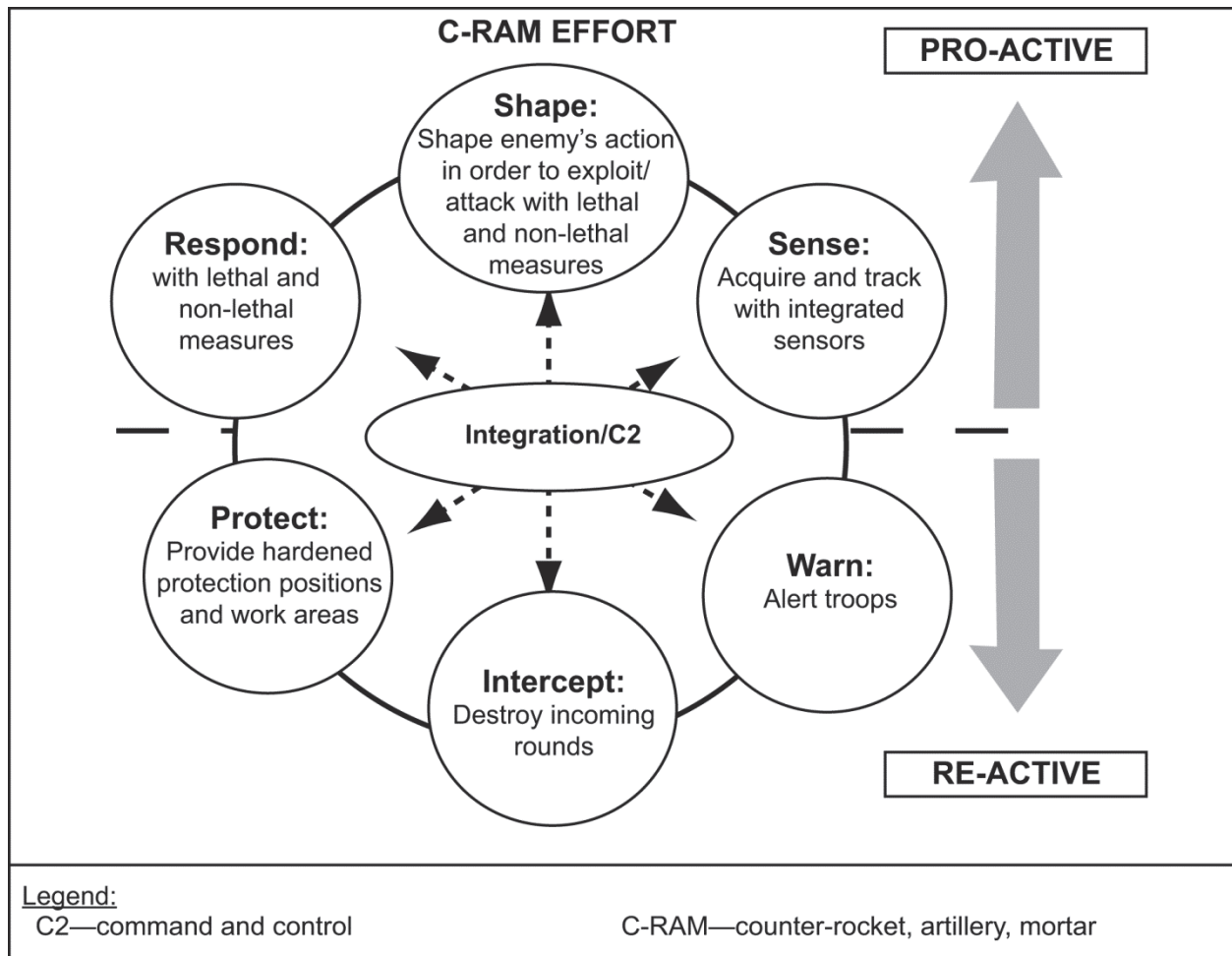





(2) Force Protection Operations. ATC units normally operate within an AO that has base force protection units assigned. These force protection units conduct operations that require ATC coordination and integration. Consider the following force protection operations by ATC units during operations:

(a) Small or medium sized unmanned aircraft operations in an aircraft operation area require notification and deconfliction with ATC operations within that area.

(b) Counter-rocket, artillery, mortar (C-RAM) operations likely share the operational environment with ATC units. The C-RAM effort is designed to integrate a variety of capabilities and assets to defeat indirect fire efforts. Rapid action to defeat indirect fire may limit reaction time of ATC units and their operations. It is critical that ATC units maintain situational awareness on operations to deconflict fire with airfield operations and ensure ATC operations do not inadvertently preclude or block C-RAM efforts. Close coordination with the base defense operations center (BDOC) will allow ATC units to integrate with the appropriate C2 feed (figure 1) and receive the quickest possible warning prior to interception.



**Figure 1. C-RAM Operational Tenets**

(3) Communications Out/Emission Control (EMCON) ATC Operations. During these procedures, aircraft operations may require alternative communication procedures between the aircraft and airfield ATC. In most instances, these pre-briefed procedures use light signals for communication between the control tower and aircraft. Another example uses airport vehicles vice lights. The tower communicates with a vehicle using low power, handheld radios, and the vehicle blocks or gives way to the aircraft based on permission to restrict taxi or allow take-off. The vehicle method allows more positive control on high tempo airfield

traffic. These procedures require close coordination between the tower and aircrew for mission accomplishment. Table 5 is an example of an operation.

**Table 5. Example of Communications Out/EMCON Procedures**

If back taxi is required or safety is in doubt, cancel communications out/emission control (EMCON), and crews should resume normal communication procedures. Request a restart of these procedures at any time by making a request with ground/tower (i.e., "Midas 20, resume communications out/EMCON").

Once airborne, resume communication with air traffic control.

- Provide the following information to operations (ops) no later than two hours prior to takeoff:
  - Call sign, number, and type of aircraft (i.e., Midas 20, four F-15Es).
  - Tail numbers.
  - Start, taxi, and takeoff times.
  - Runway line-up procedures.
- Make start, taxi, and takeoff times on time or up to 5 minutes late. After engine start, request time changes with ops (reference original time).
- Flight leads will accomplish a radio check with ops using the tail number; and obtain routing clearance by telephone prior to step, secure, or in the clear with ground using the tail number.
- All flight members will monitor ground, tower, and departure frequencies.
- During a large force employment, a representative from air traffic control will attend the mass brief.
- Communications out/EMCON launch light signals. Display a steady taxi or landing light at the tower when ready for takeoff
  - Steady Red: Stop
  - Flashing Red: Taxi clear of active runway
  - Steady Green: Cleared for take off
  - Flashing Green: Cleared to taxi

(4) Reduced Same Runway Separation. The sequential nature of military operations, coupled with the limited number of airfields, highlights the need to achieve and maintain a peak level of operation into a busy airfield or airspace. Using reduced runway separation (i.e., allowing aircraft to land in proximity to other aircraft) increases overall traffic flow into a congested airfield. Table 6 provides an example of procedures.

**Table 6. An Example of Reduced Same Runway Separation**

The pilot or controller may refuse reduced same runway separation. Federal Aviation Administration Order 7110.65 separation standards will then apply. For reduced same runway separation, same aircraft (or similar) means same airframe (e.g., an F-16C behind an F-16CJ).

Overflying aircraft on the runway: offset to the least inhabited side (responsibility rests with the pilot):

- Heavy: > 500 feet lateral or > 1,000 feet vertical separation when over-flying aircraft on the runway.
- All others: > 500 feet lateral or vertical separation when over-flying aircraft on the runway.
- Controllers: Provide appropriate traffic advisories to landing aircraft. Pilots are responsible for wake turbulence separation when maintaining visual separation or operating under visual flight rules. When operating under instrument flight rules or air traffic control (ATC) instructions, controllers must ensure standard wake turbulence separation exists.

Trail recoveries are responsible for their own inter-flight separation. ATC assumes responsibility for separation only upon flight split-up for individual ATC control.

These standards do not apply to any situation involving:

- An emergency aircraft.
- An aircraft cleared for the option.
- A low approach behind a touch-and-go.
- A touch-and-go behind a full stop.
- A braking action "less than fair" is reported.

#### **Day Minimum Separation**

It is 3,000 feet for same fighter aircraft.

It is 6,000 feet for:

- Dissimilar fighters (e.g., an F-15 behind an F-16).
- Formation landings (6,000 feet between elements). All aircraft involved must be similar. Measure distance from trailing aircraft of the lead flight and lead aircraft of the trailing flight.
- Same type tactical (non-heavy) airlift aircraft such as a C-130 behind a C-130.

It is 9,000 feet for same type, heavy class aircraft, only for full stops.

#### **Night Minimum Separation**

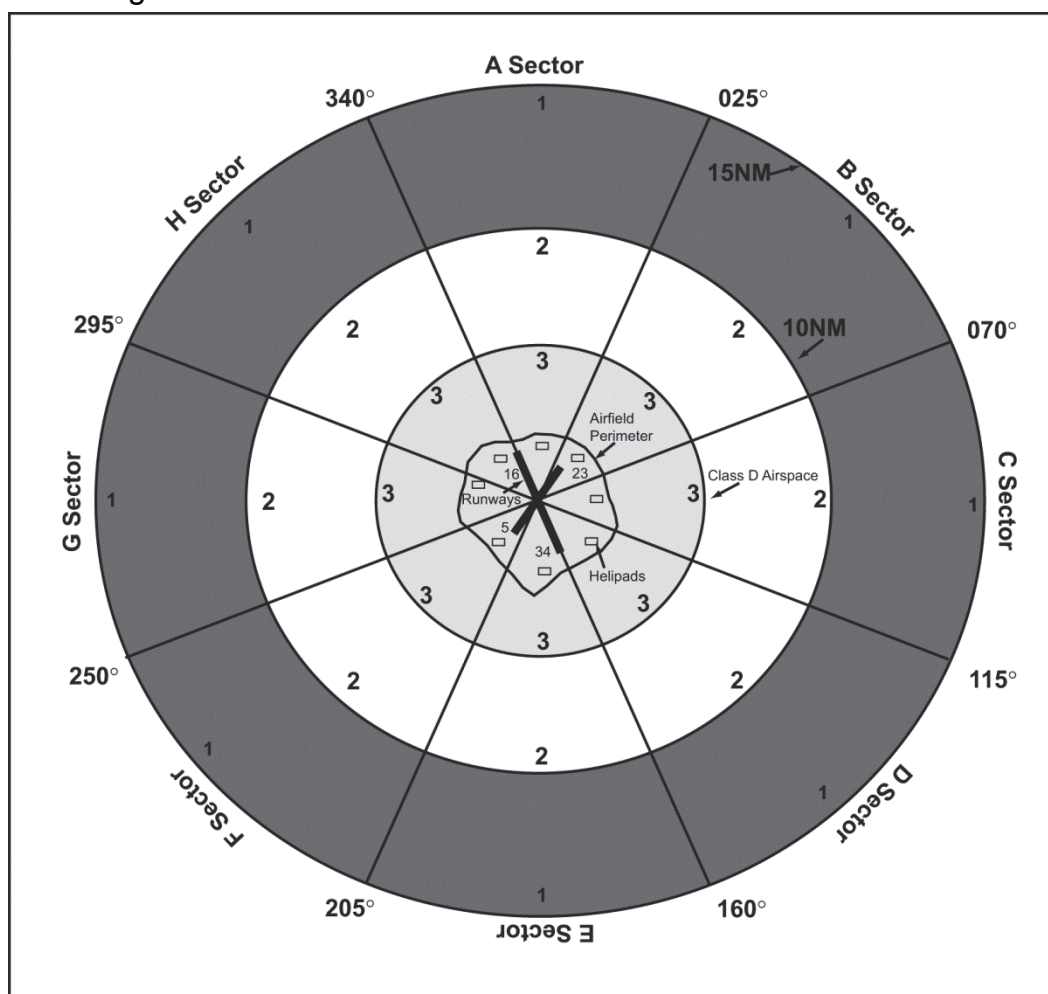
Separation is the same as day except same fighter aircraft must have 6,000 feet. Controllers must see the aircraft involved and determine distances by references to suitable night landmarks; otherwise, controllers must apply standard separation.

#### **Trail Recovery (Fighter)**

The maximum is four aircraft. Establish separation no later than 15 nautical miles (nms) out. Ensure there are 1.5-2 nm between aircraft, 5 nm between elements. Landing clearance for lead is clearance for the flight. All must report "gear down." If visual contact is lost and separation is not assured, climb 500 feet above approach altitude or 500 feet above the previous fighter.



(5) Randomized Arrival or Departure Procedures. Terminal ATC procedures in a high-threat situation can enhance aircraft survivability. A sector or wagon wheel overlay divides the airspace into eight 45-degree sectors starting at 5 nautical miles (nms) and continuing each 5 nm out to 15 nm ,or whatever number of sectors and mileage is deemed appropriate (figure 2). Designate sectors by an alpha-numeric system that is changed regularly and published within the SPINS of the current ATO or ACO cycle. The frequency of changes is based upon the threat activity level. The sectors are aligned with existing runways or helipads on the airfield and allow aircraft freedom to maneuver below the established coordinating altitude. Sectors and control become more restrictive the closer aircraft are to the airfield. Using sectors and landing pads eliminates the need for traffic or holding patterns. Aircraft report crossing each phase line (5 nm increments) of the sector until aircraft are cleared to land. Position calls enable traffic advisories and procedural separation by controllers and eliminates the need for runway use by rotary-wing traffic in situations where a large volume of fixed wing air traffic exists.



**Figure 2. Depiction of Randomized Arrival/Departure Procedures**

(6) Aircraft Traffic Patterns During Tactical Operations. Increase aircraft survivability in the terminal phase of flight operations by modifying and

randomizing aircraft traffic patterns. Table 7 is an example of a modified aircraft traffic pattern based on force protection inputs. Modify it for specific aircraft requirements or the operational environment. These procedures are not normally practiced out of theater and highlight the importance of careful planning and briefing between ATC and aviation units.

**Table 7. An Example of an Aircraft Patterns During Tactical Operations**

Pattern Condition	Arrivals	Runway	Pattern <sup>1</sup>	Defensive Systems	Tactical Departures	Multiple Patterns	Lights	Communications
None	As Required	Per Winds <sup>2</sup>	Straight-in, initial, tactical initial, beam	Not Armed	None	Yes	On	Standard
A	As Required	Per Winds <sup>2</sup>	Add: High Initial	Manual	Authorized	One <sup>3</sup>	On	Standard
B	Vary Arrival Direction	Per Winds <sup>2</sup>	Add: 500-foot downwind, 500-foot Straight-in <sup>4</sup> , ≥3,000 feet restriction for beam arrival lifted  *Vary arrivals to remain unpredictable.	Auto Allowed	Mandatory	No	Off Below 15,000 mean sea level <sup>6</sup>	Call signs not tied to platform <sup>7</sup>
C		Random <sup>5</sup>			Add: staircase, 500-foot tactical departure			Cloaked arrivals  Communications out/emission control takeoff

**Notes:**

<sup>1</sup> Fighters may execute high initial during force protection arrivals with live air-ground ordnance.

<sup>2</sup> Runway into the wind is the preferred runway.

<sup>3</sup> A second visual pattern may be flown during day in visual metrological conditions.

<sup>4</sup> Do not descend to 500 feet until within class D airspace (5 nautical miles).

<sup>5</sup> Traffic pattern permitting, ensure tail wind limits are in accordance with aircraft limitations.

<sup>6</sup> Lights out procedures:

- Taxi with lights on. Turn them off prior to takeoff. (The exception is: fighters take off and land with landing light on)
- If required to hold, request above 15,000 feet.
- If safety is in doubt, call "LIGHTS ON." All pattern aircraft will then resume peacetime lighting.

<sup>7</sup> Squadron schedulers/liaison officers will coordinate to ensure call signs are not tied to a particular airframe.

(7) UA Operations. Planners should prepare to modify deconfliction procedures normally used within the national airspace system. Procedural deconfliction will likely transition to real-time deconfliction within the Class D surface area due to expeditionary UA operations.

## 2. BDOC

a. The base commander establishes a BDOC as the focal point for force protection, security, and defense within the base boundary. The base commander uses the BDOC to plan, direct, integrate, coordinate, and control all base security efforts. It also coordinates and integrates area security operations with the base cluster operations center (if established) or other designated higher level staff. The BDOC depends on the combination of forces involved and may include sister Services, multinational, HN, and other US agencies, depending on the forces located at the

base. The center should have integrated communication links with the airfield management element, quick reaction forces, and ATC facilities to effectively counter threats with airborne and counter-fire assets. The BDOC is manned full time with key personnel and augmented with subject matter experts, as required.

b. The BDOC conducts 24-hour operations. Its primary functions include the following:

- (1) Providing the organization necessary to conduct coordinated base security operations.
- (2) Keeping the base commander informed of the current base security situation.
- (3) Monitoring the current status of assigned, attached, and tenant unit forces, including resources. Providing information to aid, allocate, and move forces or material to meet base defense requirements.
- (4) Ensuring all units within the base perimeter participate in conducting active and passive security measures.
- (5) When necessary, coordinating with the appropriate area commander or tenant commander to ensure base security actions are deconflicted with ongoing or planned combat or stability operations.

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## **Appendix A**

# **ARMY TACTICAL AIR TRAFFIC SERVICES**

### **1. Mission**

Air traffic services (ATSs) organizations are designed to support Army aviation and unified operations by providing a wide variety of services including air traffic control (ATC). Theater airfield operations groups (TAOGs) and airfield operations battalions (AOBs) carry out ATS and airfield management functions.

### **2. Doctrine**

a. ATS companies assigned to a combat aviation brigade (CAB) conduct operations as organizational elements of the CAB's general support aviation battalion (GSAB). This command relationship maximizes efficiency of operations, serving as a combat enabler for Army aviation and divisions. The company must be able to operate and complete its mission with the CAB or, if tasked, organize as a member of an aviation task force supporting joint operations.

b. AOBs and TAOGs are ATS forces that support theater-level requirements. The AOBs have an airfield management element and air traffic personnel and equipment to execute airfield and air traffic responsibilities for airfields designated for use above the CAB level. One TAOG can support five theater airfields, as required. TAOGs and AOBs are deployed based on mission, enemy, terrain and weather, troops and support available, time available, and civilian considerations. They may operate from a single base or conduct split-based operations in multiple locations within the theater of operations. Army ATS units are a strategic asset with a global mission. Active and reserve ATS units provide a full range of fixed based and tactical services before, during, and after forces deploy in support of Army, joint, and multinational operations.

c. ATS assets promote safe, flexible, and efficient use of airspace shared with a multitude of users. ATS companies enable Army aviation to maximize technology by coordinating airspace and providing recovery capabilities. ATS units enhance air operations for ground force initiatives by providing airspace information, terminal, navigational, and forward-area support services. Interface occurs with theater, joint and multinational, or host nation (HN) ATS assets during all phases of operations. ATS organizations enable air operations by collecting, processing, displaying, and issuing airspace user information. They implement procedural and positive control measures as a means for airspace deconfliction. Additionally, ATS companies support United States (US) Government agencies (interagency operations), as necessary, to reinforce national security during peacetime and contingency operations. ATS deployments support three missions sets: airspace information services, terminal ATS, and forward area support services.

#### **(1) Airspace Information Services.**

(a) An airspace information center (AIC) provides airspace information updates to friendly aircraft and is the primary coordination link between aircraft and the CAB/division. AICs operate as execution arms of the

associated airspace control elements of divisions by providing near real-time interface for airspace changes while coordinating and deconflicting airspace requirements.

(b) AIC services and updates include:

- Critical in-flight advisories and updates of airspace deviations within the area of operations (AO).
- Hostile aircraft intrusion warnings.
- Locations of rapid refueling points, forward arming and refueling points, terminal facilities, and on-call navigational aids (NAVAIDs).
- Terminal airfield status.
- Flight following and navigational assistance.
- Monitoring and assisting combat search and rescue operations.
- Planned airspace information, including restricted operations zones or orbit areas for Army Airborne command and control system aircraft controlling a battle.
- Air mission planning data and airspace control information for terminal facilities.
- Current and forecasted weather information.
- Electronic data link to Army battle command system for terminal facilities.

(2) Terminal ATS.

(a) Terminal services assist in moving aircraft, including takeoff, landing, separation, and sequencing. These services include full-service radar, tower communications, NAVAIDs, precision and non-precision instrumentation on airfields or airports, and traffic advisories. Terminal services can be temporary with minimal service support.

(b) The control tower team employs at tactical landing sites or main operating bases where high-density air traffic exists. Tower teams are responsible for controlling transitioning, landing, and departing aircraft. As the primary ATS organization for regulating and integrating terminal services, it establishes the non-precision approach capability for the terminal area. Aircraft movements in, out, and through the terminal area are closely coordinated with the tower, radar approach, and AICs to ensure terminal area awareness for deconflicting airspace and avoiding fratricide.

(c) The ground controlled approach (GCA) team employs with the tower team, providing a near all-weather, precision and non-precision approach recovery capability and surveillance vectoring to arriving and departing aircraft operating in the terminal area.

(3) Forward Area Support Services.

(a) Tactical aviation control teams (TACTs) coordinate aviation operations and are employed as initial entry forces at auxiliary areas and remote and austere locations. Mobilizing the TACT allows the commander flexibility

during all stages of force projection and provides aviation units with on-the-spot control and advisory capabilities in any environment. The TACT provides terminal and airspace information services where air assets require coordinated movement.

(b) Operations in areas such as assembly areas, landing zone, pick-up zone, and forward arming and refueling points are best suited for the TACT. Within one hour of arrival, TACTs can provide a non-precision NAVAID with positive and procedural ATS using: secure ultra-high frequency-amplitude modulation, very high frequency (VHF)-amplitude modulation, VHF-frequency modulation (FM), satellite communications (SATCOM) and high frequency (HF) radio communications, and limited meteorological information. These teams employ man-pack nondirectional (radio) beacon and secure data and voice communications packages, providing low probability of interception communications.

(c) The TACT is trained and equipped to provide initial rapid response ATS. It can operate for 72 hours without resupply or augmentation, and its small logistic footprint is conducive to rapid site establishment and retrogrades. The TACT provides certified ATC specialists uniquely trained in rapid tactical ATC operations.

### **3. Capabilities**

a. General. ATS organizations enable safe and efficient use of positive and procedural control measures with a designated airfield management structure managing high-density and congested airfields at the theater level.

b. TAOG.

(1) The TAOG mission is to provide oversight, technical expertise, and standardization for its assigned AOBs. The TAOG executes theater airfield operations and synchronizes air traffic in a joint environment. It establishes theater airfields supporting reception, staging, onward movement, and integration requirements, seaport of debarkation, aerial port of debarkation, and joint and multinational operations. It coordinates and integrates airspace use requirements with the airspace element of the controlling headquarters. The TAOG coordinates and schedules flight checks, reviews and processes terminal instrument procedures (TERPs), and provides quality assurance of controller, ATC maintenance, and flight operations.

(2) The TAOG can:

(a) Develop and validate theater ATS force requirements.

(b) Interface with appropriate theater staff elements for airfield planning and execution and ATS mission sets.

(c) Review and process TERPs.

(d) Provides personnel for a survey and reconnaissance party team to ensure air traffic procedures, ATS equipment emplacement criteria, and TERPs are considered and addressed during site survey.

(e) Conduct military contingency flight inspections for theater NAVAIDs.

- (f) Provide expertise to Army Service component command (ASCC) on Title 10, US Code; HN; and ATS issues, including contract ATC and ATS systems support contractors.
  - (g) Coordinate and synchronize ATS field service representatives.
  - (h) Synchronize theater ATS maintenance efforts.
  - (i) Identify ATS equipment staging and reset requirements.
  - (j) Execute ATS liaison responsibilities as required by ASCC with HN airspace authority and multinational air operations center AOB.
- c. AOB.
- (1) The AOB provides airfield management, base operations, and ATS services at designated airfields throughout the theater of operations. The battalion provides a command structure to other airfield service support assets. Additionally, the AOB establishes an AIC for airspace control and interfaces with the theater airspace system.
  - (2) The organizational design of the AOB does not include the associated equipment and personnel needed to provide a full range of airfield activities supporting aviation operations. An ATC operations element, airfield services element, safety and standardization section, and communication and navigation maintenance section are organic to the AOB. Aircraft crash rescue; hazardous material handling; cargo up and down loading; weather services; petroleum, oil, and lubricants section; and the base defense operations center are external support elements.
  - (3) An AOB can:
    - (a) Conduct airfield safety inspections.
    - (b) Develop local flying area rules and hazards map.
    - (c) Transmit flight movement messages.
    - (d) Develop and coordinates the pre-accident plan.
    - (e) Coordinate local flying rules on theater airspace.
    - (f) Provide personnel for a survey and reconnaissance party team to ensure air traffic procedures, ATS equipment emplacement criteria, and TERPs are considered and addressed during site survey.
    - (g) Provide aircraft refueling services. (See note.)
    - (h) Provide hazardous material handling. (See note.)
    - (i) Provide cargo up and down loading. (See note.)
    - (j) Provide force protection, security, and quick reaction force. (See note.)
    - (k) Provide liaison with the airspace authority joint force air component commander and air operations center.
    - (l) Establish airfield crash system and provides flight dispatch services.
    - (m) Process and disseminate an air tasking order, airspace control order, and special instructions information.
    - (n) Provide weather service. (See note.)



- (o) Process airspace coordinating measure requests for terminal areas.
- (p) Support the airspace common operational picture.
- (q) Establish terminal ATS (tower and GCA).
- (r) Establish AICs.
- (s) Interface with airspace elements at echelons above brigade on airspace, aviation procedures guide, or heliport procedures guide.

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Note: These are capabilities requiring augmentation.

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d. ATS Company.

(1) An ATS company supports unified land operations by providing terminal area and en route airspace information and control services and services throughout the full range of military operations. ATS companies include a control tower, GCA, AIC, and two TACTs. Also, they deploy as part of the CAB and are an integral part of the brigade's readiness.

(2) ATS companies can:

- (a) Deploy within 96 hours of notification, and are equipped for and capable of operations in any environment.
- (b) Operate a control tower upon 30 minutes of arrival in an AO and become fully operational within one hour of arrival.
- (c) Provide self-sustaining operations for 72 hours upon arrival in an AO.
- (d) Support aircraft recovery operations including personnel recovery, medical evacuation, and assistance to aircraft in distress (i.e., battle damage, inclement weather, and disoriented aircraft).
- (e) Provide airspace control supporting manned and unmanned air operations for its designated airspace sector by providing updates of airspace information.
- (f) Provide navigational assistance to friendly aircraft.
- (g) Coordinate ATC procedures with military command and control agencies and civilian agencies and organizations, including the Federal Aviation Administration (FAA) and International Civil Aviation Organization.
- (h) Provide personnel for a survey and reconnaissance party team; ensuring air traffic procedures, ATS equipment emplacement criteria, and TERPs are considered and addressed during site survey.
- (i) Provide personnel, as required, for integrated aviation planning and management of air operations.
- (j) Provide precision and non-precision NAVAIDs.
- (k) Provide essential situational awareness (SA) information for airfield base defense zone activation and execution.
- (l) Provide ATS subject matter experts to assist with the CAB's mission area relating to the joint, interagency, intergovernmental, and multinational force or unified action force.

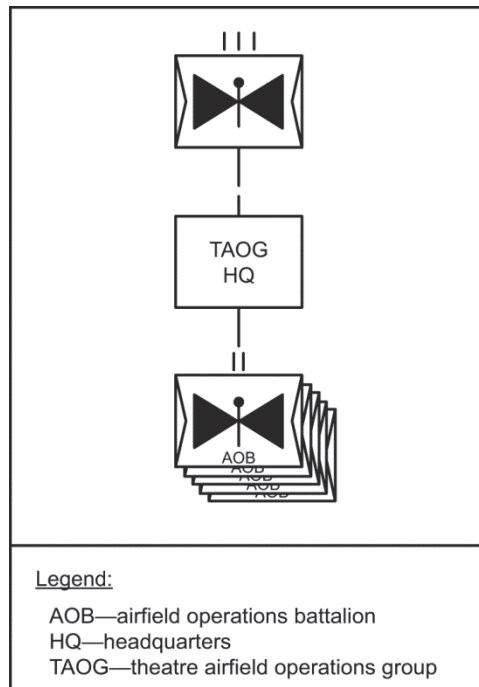
(m) Provide ATS operations across the range of military operations, including civil support and homeland security operations facilitating restoration, revitalization, stability, and sustainment services.

e. Communications. The primary means of communications within the ATS companies or AOBs are VHF-FM and wire. The companies also require HF, SATCOM, and local area network to interface with the digital battlefield for SA and to execute ATC/airspace coordination tasks.

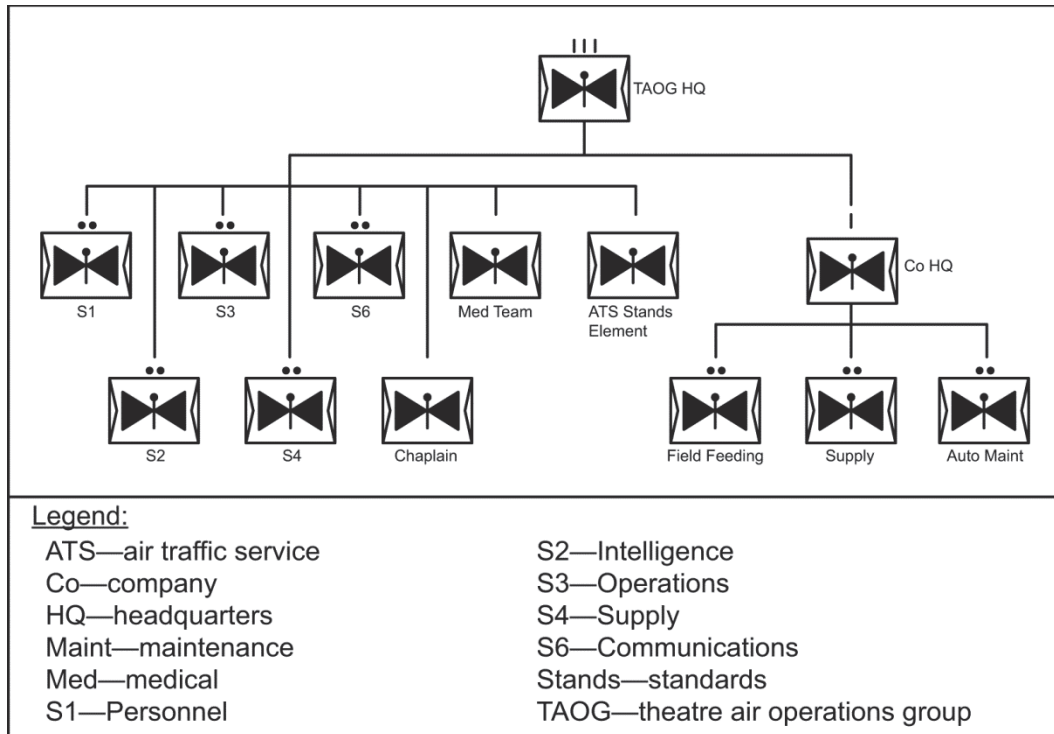
#### 4. Organization

a. Army tactical ATS forces consist of a combination of active, reserve component, and multi-component units. The current force structure of all CABs consists of two TAOGs, ten AOBs, and organic ATS companies. Army ATS units are located in the continental US, European, and Pacific theaters.

(1) TAOG. The TAOG is organic to the theater aviation command and provides tactical airfield command oversight, planning and oversight throughout the area of operations. See figures 3 and 4 for the typical TAOG structure.

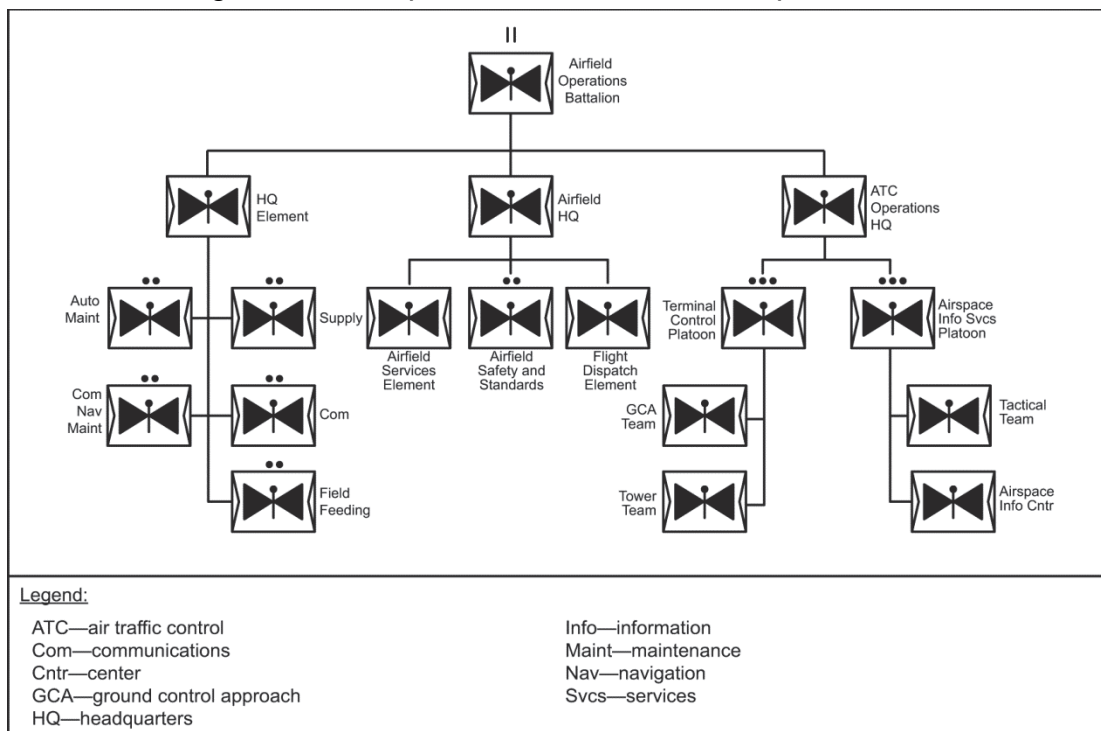


**Figure 3. TAOG Organization**



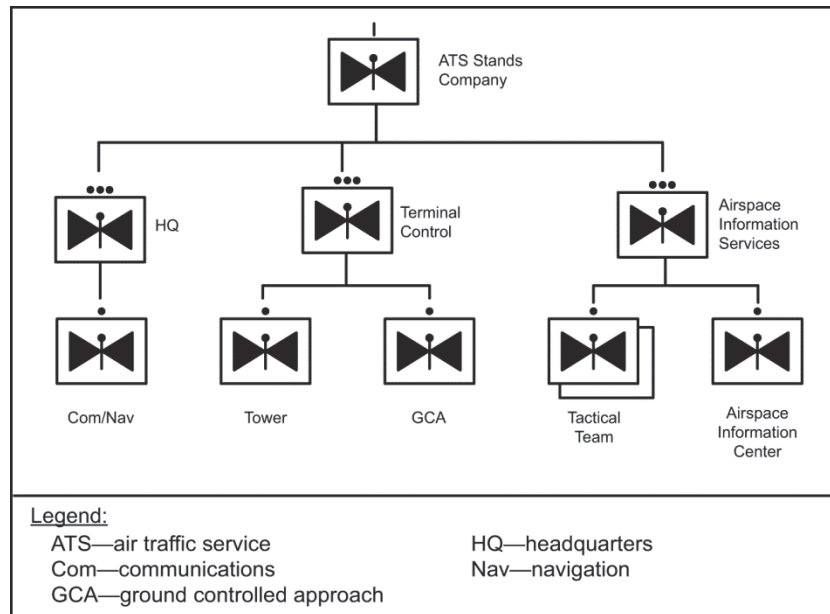
**Figure 4. TAOG Headquarters Organization**

(2) AOB. The AOB (figure 5) contains several staff and operational sections and platoons required for managing and executing airfield activities at designated airfields within the theater of operations. The AOB has organic ATS forces, airfield management headquarters, and sustainment personnel.



**Figure 5. AOB Organization**

(3) ATS Company. The ATS company (figure 6) is organic to the GSAB for training, safety, standardization, leader development, and sustainment. It is inherently dependent on the GSAB for ground maintenance, logistics, personnel actions, feeding, health care, and other sustainment support services.



**Figure 6. ATS Company Organization Chart**

## 5. Training

a. Initial Training. Initial training for Army air traffic controllers is conducted at Fort Rucker, Alabama. Upon completion, a graduate is qualified for worldwide assignment to a fixed base tower, GCA radar, or a tactical ATC unit. Training Circular 3-04.81, *Air Traffic Control Facility Operations, Training, Maintenance, and Standardization*, and Field Manual (FM) 3-04.120, *Air Traffic Services Operations*, cover the requirements and qualifications of individuals completing this training. The individual qualification and military operational specialties are listed in table 8.

<b>Table 8. Army ATC Military Operational Specialties (MOSs)</b>	
<b>Qualification – Officers</b>	<b>Army MOSs</b>
Theater Airfield Operations Group Commander	15B O-6
Airfield Operations Battalion Commander	15B O-5
Air Traffic Service Company Commander	15B O-3
Air Traffic and Airspace Management Technician	150A CWO
<b>Qualification – Enlisted</b>	<b>Army MOSs</b>
Aviation Operations Sergeant/Sergeant Major	15P50 E-8, E-9
Air Traffic Service Platoon Sergeant/Facility Chief	15Q40 E-7
Facility Chief Tower, Radar, airspace information center (AIC)	15Q30 E-6
Shift Leader Tower, Radar, AIC	15Q20 E-5
Air Traffic Controller Tower, Radar, AIC	15Q10 E-1–E-4
Note: Enlisted personnel also may have Pathfinder, joint air tactical operations, or tactical air operations additional skill identifiers.	

b. Follow-on Unit Training/Qualification.

(1) Training for warfighting will always remain the top priority for the Army. Warfighting readiness is derived from tactical and technical competence and from confidence in individual and unit skills. Competence relates to the ability to fight doctrinally through tactical and technical execution. Confidence is the individual and collective belief that the Soldier can do all things better than the adversary and that the Soldier possesses the trust and will to accomplish the mission.

(2) Aviation operations require worldwide strategic and tactical mobility. As a fully integrated member of the combined arms team, aviation forces conduct a wide range of tasks across the range of military operations and during stability and reconstruction operations. ATS units enable aviation to operate in complex surroundings and are key to mitigating risk often present within hazardous operating environments. Integrating ATS elements with other aviation units within the CAB is critical in ensuring ATS assets are exercised and trained to meet wartime task proficiency.

(3) Army regulation (AR) 95-2, *Airspace, Airfields/Heliports, Flight Activities, Air Traffic Control, and Navigational Aids*, establishes procedures, policy, responsibilities and standardization requirements for ATC training programs. This regulation, along with standards published within FAA Order (FAAO) 7220.1B, *Certification and Rating Procedures for Department of Defense (DoD) Personnel*, provide the construct for ATC training for members of the US Army. The overall combat effectiveness of ATS unit training depends upon individual, team, and collective training statuses. Individual, team, and collective proficiency must be balanced by ensuring training resources are used at the individual and collective proficiency levels. Readiness levels (RLs) correlate a Soldier's proficiency level and mission readiness.

(4) RL training begins with proficiency development at the individual level and progresses through the team level to collective proficiency. This process follows the crawl-walk-run model of training. Tasks required for air traffic controllers to progress from various levels are contained within the commander's task list (CTL). CTL requirements are battle-focused and tasked-based, and derived from the unit's mission essential task list and the appropriate air traffic training program (ATTP) for the ATS on which the Soldier is assigned or training. In some cases, air traffic controllers may have more than one RL. For example, controllers who are RL-1 in their assigned ATS system may be RL-2 or RL-3 in other ATS systems within the unit. The following guidelines are used when assigning RLs to air traffic controllers and assessing ATTP progression.

(a) RL-1. Air traffic controllers are awarded RL-1 upon completing all ATTP training requirements. This phase culminates with an ATC certification or controller evaluation in accordance with AR 95-2 and appropriate FAAOs. A controller awarded this RL has been determined to possess the necessary tactical and technical skills to perform duties at the full performance level. Controllers should be removed from RL-1 and identified RL-2 when additional training is warranted due to a lack of proficiency or when individual currency requirements have exceeded guidelines.

(b) RL-2. Air traffic controllers are awarded RL-2 when undergoing advanced ATS system training at the team level and the required CTLs for RL-1 have not yet been met. This RL is characterized with proficiency in collective and team tasks associated with the advanced operation of ATS systems. Tasks are performed in complex varying environments and require successful coordination and integration of combined arms operations. Advanced ATC procedures for the safe operation and handling of aircraft during all phases of tactical operations are a critical element of this level. Controllers possessing a previous ATC certification on the same ATS system may be awarded this level through the commander's evaluation processes. Controllers will remain at RL-2 until all RL-1 level provisions have been met and ATC certification has been successfully completed.

(c) RL-3. Air traffic controllers are awarded RL-3 when they have completed a military occupational specialty (MOS) awarding ATC school and are assigned to an ATS system for which they have not previously obtained an ATC certification. This RL is characterized with the individual task proficiency in the installation, operation, and operator's maintenance of air traffic systems. This phase reinforces basic ATC procedures in controlled training and limited aircraft traffic environments. A controller assigned this RL is under the direct supervision of leaders and trainers of the ATS unit.

(d) RL-4. Air traffic controllers are awarded RL-4 when ATTP progression is not required or has been temporarily suspended due to the following:

- The controller is assigned to a staff position not requiring ATTP progression or development.
- The controller is medically grounded/pending medical disqualification.
- The controller is pending MOS reclassification/chapter actions.
- The controller is assigned to a National Guard position without being a graduate of an approved ATC school.

(e) Commander's Evaluation. The commander's evaluation provides an opportunity to conduct an assessment of newly assigned air traffic controllers and allows associating a higher RL due to previous ATS certifications. This evaluation consists of a records review by the commander or a designated representative within 30 days after the controller is assigned to the unit. If the controller successfully completes all phases of an ATTP in the same ATS system, he/she may be initially designated RL-2.

## **6. Equipment**

For information on Army ATC Equipment, see FM 3-04.120, *Air Traffic Services Operations*, Appendix B "Air Traffic Control Systems."

## **7. Army ATC Point of Contact**

US Army Aviation Center of Excellence (USAACE), Directorate of Doctrine and Training (DOTD), ATTN: ATZQ-TD-D, Fort Rucker, AL 36362-5263, (DSN) 558-3551, or (334) 255-3551, [av.doctrine@us.army.mil](mailto:av.doctrine@us.army.mil).

## Appendix B

# MARINE CORPS AIR TRAFFIC CONTROL

### 1. Mission

The Marine Corps air traffic control (ATC) mission is to provide all-weather radar and non-radar approach, departure, en route, and tower ATC services. Marine ATC provides initial, transition, and sustained air traffic support for joint and Marine Air Ground Task Force (MAGTF) air operations in any environment. The Marine ATC detachment (MATCD) can be task organized to support ATC operations at forward operating bases (FOBs), such as a main air base, air facility, air site, and air points (e.g., assault zones, forward arming and refueling points, air delivered ground refueling, and lager points).

### 2. Doctrine

- a. Marine air traffic control (MATC) is a key terminal control agency within the Marine air command and control system (MACCS). By providing air traffic service, and functioning as the airfield communications system node at each Marine FOB, MATC is the enabling MACCS agency for the start and end of each aircraft sortie. As part of this role, MATC connects airfield functions to the MACCS.
- b. To support MAGTF operations, MATC is structured to provide MATCDs and Marine air traffic control mobile team (MMTs). These units are provided by the Marine Air Control Squadron (MACS). MATCDs normally deploy as a part of the MACCS within the MAGTF but may also deploy independently or as part of a joint force, should the mission dictate.
- c. The MATCD functions as an integral part of a MAGTF or joint force integrated air defense system (IADS) by providing input on friendly aircraft and serving as the controlling agency for the activation of a base defense zone (BDZ).
- d. Planning for Employment. Specific information on the MAGTF planning process and the documents useful in conducting MAGTF and aviation combat element (ACE) planning are contained in Marine Corps Warfighting Publication (MCWP) 5-1, *Marine Corps Planning Process*; MCWP 5-11.1, *MAGTF Aviation Planning*; and Marine Corps Reference Publication 5-11.1A, *MAGTF Aviation Planning Documents*. MATC specific planning checklists are available via Marine Aviation Weapons and Tactics Squadron One publications: MMT Tactical standard operating procedures (SOPs); MCWP 3-25.8, *Marine Air Traffic Control Detachment Handbook*; and unit SOPs. In addition to publications, MATC leadership undergoes training for the implementation of the Marine Corps Planning Process. Marine expeditionary units (MEUs) use the rapid response planning process (R2P2). R2P2 enables a MEU to receive a mission and expeditiously move ship-to-shore.
- e. Employment Organization. Each deployment's force size, organization, and composition is situation dependent based on the joint force commander guidance and requirements. The MATCD can provide support for a main air base in a few days and tasking up to three MMTs to support multiple air facilities or air sites. The

MATCD may be task organized to support the full spectrum of FOB sizes and traffic requirements.

f. Amphibious Operations. The MATCD supports amphibious operations on a large scale by phasing ashore a task organized MATCD supporting ship to objective maneuver. On a lesser scale, MATCDs support each MEU with an MMT. Joint, Navy, and Marine Corps doctrine further describes the command and control (C2) relationships for establishing and phasing control ashore to or beyond the littoral region.

### **3. Capabilities**

a. Marine ATC deploys and operates within the MAGTF, joint force, or independently supporting various types of operations.

(1) Examples of ATC support include:

- (a) Assisting in humanitarian and security efforts.
- (b) Assisting other joint and allied services with air traffic operations.
- (c) Supporting intergovernmental ATC requirements.
- (d) Providing airspace and ATC liaison to host nation (HN) and civil ATC agencies.
- (e) Providing ATC services within amphibious operations and associated MEU missions, such as noncombatant evacuation operations and airfield seizures.

(2) MATCD functions include:

- (a) Providing airspace control, management, and surveillance for its designated airspace sector.
- (b) Providing required ATC services to support MAGTF and joint operations.
- (c) Providing navigational aids (NAVAIDs) and navigational assistance to friendly aircraft, including en route ATC services.
- (d) Interfacing with the MACCS, higher and adjacent theater air-ground system (TAGS) agencies, Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), and HN ATC agencies.
- (e) Conducting MATC specific survey, liaison, and reconnaissance party actions to ensure air traffic procedures, MATCD siting criteria, terminal instrument procedures (TERPS), and joint and coalition landing criteria are considered in planning for the area of operations.
- (f) Providing liaison officers.
- (g) Disseminating air and ground situation information (radar surveillance and general information) to adjacent and higher air C2 nodes.
- (h) Providing ATC operational liaison with MAGTF, joint, ICAO, and HN ATC agencies.
- (i) Planning, coordinating, and conducting the airfield BDZ.
- (j) Providing initial TERPS development, maintenance, and flight certification for instrument procedures or airspace structure at continental United States



fixed bases or any tactical ATC environment. This includes an airfield survey that allows for certifying instrument procedures and the airfield to recover any Department of Defense, contract, or civil aircraft supporting combat or contingency operations.

(k) Providing meteorological, oceanographic, and space environmental information, products, and services to support Marine Corps operations.

(3) MMT functions include the following tasks:

(a) Recommending and assisting in assault zone site selection and determining each site's operational suitability for numbers and types of aircraft.

(b) Conducting assault zone surveys. Surveys provide operational data, determine landing surface suitability for air operations, and annotate hazards to aviation, including obstructions and obstacles.

(c) Marking and operating assault zones for fixed wing, tiltrotor, and rotary wing aircraft, and unmanned aircraft (UA).

(d) Providing terminal NAVAIDs, beacons, and associated TERPs.

(e) Coordinating with civil and military control agencies.

(f) Establishing ground-to-air and ground-to-ground communications to link austere sites with higher and adjacent C2 nodes.

(g) Providing ATC services (positive and procedural control) at designated assault zones, including formulating ATC procedures and issuing clearances, instructions, and advisories to effect safe, orderly, and expeditious movement of air traffic in their assigned airspace.

(h) Providing limited weather observations and information.

(i) Acting as the Air Boss, if an aviator is not available.

#### **4. Organization**

a. MAGTF. The Marine Corps organizes its forces for employment by integrating four functional elements: ground combat, ACE, logistics combat, and command into one cohesive task force, the MAGTF. A MAGTF can range in size from small special purpose units to large Marine Expeditionary Forces. Under a single commander, the MAGTF provides the six Marine Corps warfighting functions of: C2, maneuver, fires, intelligence, logistics, and force protection (Marine Corps Doctrinal Publication 1-2, *Campaigning*). The MAGTF is unique among the Services due to the close coordination and teamwork between the air and ground combat elements.

b. ACE. Marine aviation has six functions: anti-aircraft warfare, assault support, offensive air support, electronic warfare, air reconnaissance, and control of aircraft and missiles. With these functions, the ACE dramatically increases the MAGTF's combat power, mobility, and area of influence. Due to the close integration within the MAGTF, Marine aviation can provide responsive and organic support with fixed wing, rotary wing, tiltrotor, and UA. C2 of Marine aviation is provided by the MACCS. MACCS agencies are provided, operated, and maintained by the Marine Air Control Group. Additional information can be found in MCWP 3-25, *Control of Aircraft and Missiles*. For this appendix, the terms MACCS and MACG are synonymous.

c. MACCS. The MACCS provides the ACE commander the ability to exercise centralized command and decentralized control of MAGTF air assets and operations. The ACE commander delegates airspace control to the subordinate agencies of the MACCS. ATC operations within the terminal control area are executed by the MATCD.

d. MATCD. MATCDs are structured to operate as subordinate elements of the MACS. Each MATCD is organized and equipped to provide continuous all-weather ATC services to an independent and geographically separated main air base or air facility. The MATCD also functions as part of a MAGTF IADS by participating in air defense operations via the BDZ. MATC equipment is maintained by MATCD personnel and supported by Naval Air Systems Command.

(1) If deployed in a joint environment, MATCDs will operate as part of the TAGS in accordance with the airspace control plan and airspace control order. If deployed as a part of the MACCS, MATCDs fulfill their traditional role of supporting MAGTF air operations.

(2) The MATCD's assigned mission and supporting task organization determines the ATC element's exact crew requirements. The MATCD is headed by a detachment commander who coordinates detachment activities and supervises the detachment's ATC watch officers. ATC crews are operationally organized into command, radar control, and tower control sections.

(a) Command Section. The command section, which includes the detachment commander, senior noncommissioned officer in charge, ATC maintenance officer, meteorological and oceanographic officer, and two watch commanders, supervises and coordinates the MATCD's activities. The mission of the command section is two-fold: ensure safe and efficient control of friendly aircraft, and actively participate within the MACCS and larger TAGS.

(b) Radar Control Section. The radar section is responsible for managing assigned airspace and providing radar and non-radar ATC services to aircraft operating within it. The radar section is responsible for integrating air traffic into the air defense system, coordinating the BDZ, forwarding radar surveillance via data link to other MAGTF and joint C2 agencies, and coordinating aircraft movement information with adjacent and higher air C2 agencies.

(c) Tower Control Section. The control tower issues clearances and information to aircraft and vehicular traffic operating on runways, taxiways, and other designated areas of the airfield and to aircraft operating in assigned airspace. Airspace is typically limited to an area that can be visually observed and surveyed from the tower (i.e., approximately, a 5 nautical mile radius from the airfield up to an altitude of 2,500 feet above ground level). When operating without a radar section, the control tower coordinates aircraft movement information with adjacent and higher air C2 agencies.

(3) MMT. The MMT is trained and equipped to provide initial, rapid response ATC and communications systems to support the MAGTF. The MMT is task organized to provide initial ATC services at assault zones for fixed wing and

tiltrotor aircraft and at helicopter landing zones for rotary-wing aircraft. The MMT can provide ATC services to any type of zone and airfield control up to and including an instrument flight rules tactical aid to navigation approach. The MMT may also be employed independent of the MATCD in Marine Expeditionary Force operations or while assigned to a special purpose MAGTF or MEU. The MMT is manned with air traffic controllers and communications and NAVAIDs technicians.

## 5. Training

Marine ATC personnel are assigned to Marine Corps air stations (MCAS) to obtain initial certifications and maintain controller proficiency (under FAA certification guidelines) until they are required to deploy. MCAS and MATCDs work closely together to provide controllers with tactical training on expeditionary equipment and procedures. Once assigned to a deployment, controllers detach from air stations and are assigned to tactical units. Throughout this unique relationship, MATCDs and MMTs are manned with fully qualified and certified ATC personnel. The following list describes the baseline and follow on courses for Marine air traffic controller training.

- a. Initial Training. Air traffic controller entry-level training is conducted at Naval Air Station, Pensacola. Upon course completion, ATC personnel will have finished the FAA Airman Written Test and have the basic knowledge necessary to begin training as air traffic controllers.
- b. On-the-Job Training. Subsequent to basic ATC school training, each air traffic controller undergoes a period of on-the-job training to attain military occupational specialty (MOS) and initial certifications (see table 9). Air traffic controller training requirements, both individual and crew-specific, are standardized by NAVAIR 00-80T-114, *Air Traffic Control Facilities Manual*. Technical MOS and proficiency training for tower and radar positions are conducted at Marine Corps ATC facilities. Approach controller training is available at MCAS Beaufort, South Carolina; MCAS Cherry Point, North Carolina; MCAS Iwakuni, Japan; and MCAS Yuma, Arizona.
- c. Expeditionary Training. Included in the qualifications attained at the air station is the requirement to complete the aviation career progression model, which introduces MATC personnel to the MACCS agencies, the six functions of Marine Aviation, and a variety of topics related to aviation operations. Once complete with a station qualification, MATC personnel complete additional requirements related to employing MATC in a tactical environment to achieve training and readiness proficiency in expeditionary requirements.
- d. Follow-on Schools. Several formal and informal schools are available to air traffic controllers once initial certifications have been achieved. Courses of instruction include the following:
  - (1) Weapons and tactics instructor.
  - (2) MMT leader instructor.
  - (3) Advanced radar ATC (approach).
  - (4) Military airspace management.
  - (5) ATC manager's.

- (6) Joint air operations air C2.
- (7) TERPS.
- (8) Multi-tactical data link advanced joint interoperability.
- (9) Link 16 joint interoperability.
- (10) Air and space operations center initial qualification training airspace.

<b>Table 9. MATC Occupational Specialties</b>	
<b>Qualification</b>	<b>Marine Occupational Specialty</b>
Air Traffic Controller Basic	7257 (enlisted)
Air Traffic Controller – Tower	7252 (enlisted)
Air Traffic Controller – Radar	7253 (enlisted)
Air Traffic Controller – Radar Approach	7254 (enlisted)
Senior Air Traffic Controller	7291 (enlisted: E-8, E-9)
Air Traffic Control Officer	7220 (officer)

## **6. Equipment**

For information on Marine Corps ATC Equipment, see MCWP 3-25.8, *Marine Air Traffic Control Detachment Handbook*.

## **7. Marine Corps ATC Points of Contact**

- a. Commandant of the Marine Corps; ATTN: APX-25; 3000 Marine Corps Pentagon; RM 5D548; Washington, DC 20350; DSN 223-0952 (Comm (703)693-0952).
- b. Marine Aviation Weapons and Tactics Squadron One; ATTN: C-3 MATC Division; P.O. Box 99200; Yuma, AZ 85369-9200; DSN 269-2957 (Comm (928)-269-2957).

## **Appendix C**

### **NAVY AIR TRAFFIC CONTROL**

#### **1. Mission**

The Navy air traffic control (ATC) mission is to provide for safe, orderly, and expeditious movement of air traffic through the employment of non-radar, monitor, close, and positive controls. It includes all flight operations afloat and ashore within airspace allocated to support Department of Defense operations worldwide.

#### **2. Doctrine**

The Office of the Chief of Naval Operations (OPNAV) N980A Naval Airspace and Air Traffic Control Standards and Evaluation Agency governs the Navy ATC program. OPNAV delegates ATC operational responsibility for ATC operations relating to aircraft carriers, nuclear (CVN) and shore facilities to Commander, Naval Air Forces. For large deck amphibious assault ships (LHA/LHD) and surface combatant ships with ATC capabilities, OPNAV delegates responsibility to Commander, Naval Surface Force, Atlantic and Pacific. Naval ATC operations are located at the following units:

- a. Naval Air Stations/Naval Air Facilities. ATC personnel are those personnel and equipment associated with operating the control tower, approach control, terminal radar, en route radar, special use airspace scheduling, flight planning, and air navigational aids. Naval air station operations are similar to civilian airports. ATC will monitor all aircraft, according to military and Federal Aviation Administration (FAA) regulations.
- b. CVN. Aircraft carriers are all weather, maritime platforms capable of conducting instrument flight rules (IFR) and visual flight rules (VFR) flight operations and providing landing capabilities for fixed wing (with tailhook), vertical and/or short takeoff and landing aircraft (V/STOL), and rotary wing aircraft. The carrier air traffic control center (CATCC) is the primary ATC entity within the carrier strike group (CSG) and provides the following ATC services: departure, marshal, approach, and final approach control.
- c. LHA/LHD. Amphibious assault ships are all weather, maritime platforms capable of conducting IFR and VFR flight operations and providing landing capabilities for V/STOL and rotary-wing aircraft. The amphibious air traffic control center (AATCC) and the tactical air control squadrons are the primary ATC entities within the expeditionary strike group (ESG) and provide the following services: departure, marshal, approach, and final approach control; and, planning, directing, and coordinating amphibious task force (ATF) or ESG tactical air operations in a joint and multinational environment.
- d. Fleet Area Control and Surveillance Facility (FACSFAC). FACSFAC are responsible for over-the-water air, surface, and subsurface operations which may impact designated airspace. The ATC services provided are similar to an FAA en route facility.

### 3. Capabilities

#### a. Shore-based facilities:

(1) Naval Air Stations/Naval Air Facilities. These facilities provide the broad spectrum of shore side ATC support to meet Navy requirements to operate safely within national and international airspace structures. Navy facilities span from basic airfields with tower control to complex support facilities with multiple radar and approach services. Additionally, specific naval airfields have developed unique capabilities to support carrier operations, including having carrier optical landing aids and short field arresting gear. Also, these fields will have access to aviators with specialized training designated as landing signal officers who may assist Service ATC facilities in training during field carrier landing practice and emergencies involving carrier-based aircraft.

(2) FACSFAC. FACSFACs are coastal facilities equipped and staffed to manage and schedule special use airspace, operating areas, and oceanic airspace supporting air, surface, and subsurface operations. FACSFACs are set up for ATC separation and airspace scheduling, deconfliction, and containment. These facilities manage the major training areas off the coasts of the United States (US). FACSFACs are manned with air traffic controllers as well as operations specialists (OSs). OSs possess specialized training to employ military aircraft for air intercepts or other air-to-air combat training and are prohibited by FAA regulations from controlling aircraft outside of military training areas or in international airspace.

#### b. Sea-based facilities:

(1) CSG. There are two ATC controlling agencies located on the aircraft carrier within the CSG—CATCC and tower. The control area is normally a 50 nautical mile (nm) radius from the carrier with unlimited altitude, and the control zone around the tower extends 5 nm and to 2,500 feet upward.

(a) CATCC. The CATCC provides radar control services for air traffic within the area of operation. CATCC is manned by ATC personnel.

(b) Tower. The tower performs much like a traditional ATC tower and maintains visual control of aircraft within a 5 nm radius and 2,500 feet above ground level (AGL) of the carrier. Unlike a traditional tower, the carrier tower is manned by aviation officers who are not FAA qualified.

(2) ESG. There are three ATC controlling agencies within the ESG. They are the AATCC, tower, and Navy tactical air control center (TACC). The control area is normally a 50 nm radius with an unlimited altitude ceiling from the LHA/LHD.

(a) AATCC. The AATCC provides radar control services for air traffic within the area of jurisdiction. AATCC is manned by ATC personnel located in the LHA/LHD only. AATCC's control area is normally a 50 nm radius around the ship.

(b) Tower. The tower performs much like a traditional ATC tower and maintains visual control of aircraft within a 5 nm radius and 2,500 feet AGL of the LHA/LHD. Like the carrier tower, the LHA/LHD tower is manned by aviation officers who are not FAA qualified.

(c) Navy TACC. The Navy TACC is located on the LHA/LHD class ships. The primary Navy TACC missions are to plan, direct, control, and coordinate ATF or ESG tactical air operations in a joint and multinational environments. Navy TACC maintains tactical and mission control of the airspace beyond the ship's control zone and ensures each air capable ship has the airspace it needs to safely conduct launch and recovery operations. Additionally, it controls all aircraft within an established amphibious objective area or high-density airspace control zone until transfer can be safely assumed by shore-based or airborne forward controllers.

(3) Air Capable Ships Other than Carriers or Large Amphibious Ships. All ships with a flight deck will have a tower for visual control. Towers are only manned when helicopters are landing or departing. Like the larger deck ships, tower personnel are not FAA qualified; and depending on embarked personnel, trained surface warfare officers without benefit of an aviation background, will operate the tower.

c. Navy Expeditionary ATC Personnel. The Navy supports Marine Corps expeditionary operations ashore two ways, through individual augmentees and integration into the Marine Expeditionary Unit (MEU) Marine air traffic control mobile team (MMT).

(1) As individual augmentees, Navy air traffic controllers have been deployed to support shore operations in Iraq, Afghanistan, and Djibouti, becoming an integral part of the Navy/Marine ATC team. These qualified Navy controllers receive a two-month combat field training program to augment forward Marine ATC personnel at airfields in combat zones.

(2) The Navy supports the MMT with designated ESG tactical air control squadron (TACRON) detachment personnel who train with the MMT embedded in the MEU. These Sailors train with the MMT during predeployment training and operationally disembark to join Marines ashore.

#### **4. Organization**

Navy ATC functions as an integral part of naval aviation operations and its personnel normally are assigned to shore stations (continental and outside the continental US), LHAs/LHDs, and CVNs to accomplish their mission, and not as a separate ATC unit. TACRONs deploy detachments with ATC personnel and operate as a task organized unit supporting amphibious force operations. They are responsible for providing centralized command, control, and planning coordination of all air support and airspace required for amphibious operations for numbered fleet commanders.

#### **5. Training**

a. Navy ATC training begins with a Navy/Marine Corps 16-week basic ATC course, which meets Navy and FAA basic ATC requirements. School is followed with fleet assignment and on-the-job training to obtain a variety of certifications and qualifications meeting FAA and Navy standards (See table 10). The two types of training are qualification and proficiency.

(1) Qualification training is on-the-job training followed by a certification check-ride which results in obtaining qualifications throughout the ATC system.

(2) Proficiency training is a continuous requirement of bookwork, testing, procedures, and position-specific, annual, over-the-shoulder quality assurance checks to maintain qualifications.

**Table 10. Navy ATC Enlisted Classification Codes**

<b>Air Traffic Control (ATC) School</b>	<b>Enlisted Code</b>
Air Traffic Controller A1 School (Basic ATC School)	0000
Advanced Radar ATC School	6901
Carrier Air Traffic Control Center (CATCC) Operations Course	6902
Amphibious Air Traffic Control Center (AATCC) Operations Course	6903
Air Traffic Managers Course	6904
<b>Fully Rated Controller (See note)</b>	<b>Enlisted Code</b>
Terminal Radar Approach Control Controller	6931
CATCC Controller	6932
AATCC Controller	6933
Tactical Air Control Center Controller	6934
Fleet Area Control and Surveillance Facility Controller	6935
Radar ATC Facility Controller	6936
Control Tower Operator	6937
<p>Note: Fully rated controllers are awarded Naval Enlisted Classification (NEC) for achieving qualification on all operating positions with-in the type ATC facility listed. NEC awarded controllers need not be designated as branch/facility supervisor to receive an NEC. Controllers not fully rated may be qualified on positions leading to full rating (e.g., ground control, arrival control, radar final control, flight data, clearance delivery, or sector control).</p>	

b. Most Navy ATC facilities have access to precision approach radar (PAR) and radar simulators to assist in training, certification, and qualification within the ATC requirements.

## 6. Equipment

a. CVN. Each carrier is equipped with multiple air search radars, capable of receiving and interrogating various identification, friend or foe (IFF) modes, and a precision approach landing system (PALS) which provides pilots capability to conduct PAR and instrument landing system (ILS) type precision approaches for landing on the ship.



b. LHA/LHD. Each ship is equipped with multiple air search radars, capable of receiving/interrogating various IFF, modes, and a PALS which provide pilots the capability to conduct PAR and ILS type precision approaches for landing on the ship.

## **7. Navy ATC Points of Contacts**

- a. Chief of Naval Operations 980A (NAATSEA), 2000 Navy Pentagon, Washington, DC 20350-2000.
- b. Commander, Naval Air Forces, NAS North Island, San Diego, CA 92135-7051.
- c. Commander, Tactical Air Control Group One, 3603 Tarawa Rd, San Diego, CA 92155-5593.
- d. Commanding Officer, Naval Air Technical Training Center, 230 Chevalier Field Ave, Pensacola, FL 32508-5113.

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## **Appendix D**

# **AIR FORCE AIR TRAFFIC CONTROL**

### **1. Mission**

The Air Force air traffic control (ATC) mission is to enable a full range of military operations from combat to stability operations. The Air Force, with the Air National Guard (ANG) component, provides safe, efficient, and effective ATC support to theater combat operations and combat airspace management, similar to what its fixed-based facilities provide in the continental United States (US) and overseas. The Air Force enjoys a robust ANG component, which plays a key role in ATC operations and can be available to support theater operations.

### **2. Doctrine**

Effective ATC in a contingency environment requires close coordination among airspace control and air defense elements to maximize combat effectiveness while preventing fratricide and mutual interference. The Air Force uses applicable host nation (HN) and Service regulations and procedures when augmenting a civil, foreign ATC, or other Service's facility.

### **3. Capabilities**

a. ATC Assets. The Air Force has deployable ATC and landing systems (DATCALs) assigned in combat communications groups (CCG) and ANG ATC squadrons across the country. ATC assets are dispersed across various units. ATC forces are sourced and tasked through the air expeditionary force construct based upon capabilities to support combatant commander requirements (see Air Force Instruction [AFI] 10-401, *Air Force Operations Planning and Execution*).

b. Initial Forces.

(1) Combat Controllers/Special Tactics Teams (STTs). An STT contains combat control, combat weather, and pararescue personnel. STTs can assess, establish, and control landing zones (LZs); provide weather observations and forecasting; and provide battlefield trauma care. They employ with airfield seizure forces, contingency response groups (CRGs), or unilaterally to provide terminal control of an airfield. Combat control personnel provide LZ survey or airfield assessment, ATC, navigation aids, tactical airfield lighting, and marshaling services during airfield seizures. Additionally, the STT may be attached to the contingency response force (CRF) with specification of tactical control during airfield opening for a specified duration. During this time, the CRF will provide routine base operating support for the STT. Also, the STT can prove instrumental in the seamless transition from seizure operations to airbase opening operations. An STT provides assessment, survey, establishment, and operation of austere, dirt airfields up to and including international airports. An STT can provide tactical air navigation (TACAN) services, overt or covert airfield lighting, limited weather observations, procedural deconfliction, ground control, and night ATC services. An STT is capable of surveying improved, semi-improved, and unimproved

landing strips; drop zones; and helicopter LZs. STT forces will remain under the operational control of the joint special operations air component.

(2) CRF. CRF facilitate transition between airfield seizure forces and follow-on forces. Both airfield management (AM) and ATC capabilities are available with the CRF construct. CRF conduct an array of missions, including assessing airbase capabilities, opening expeditionary airbases, and conducting airfield operations. ATC provides liaison, augmentation, and visual flight rules capabilities.

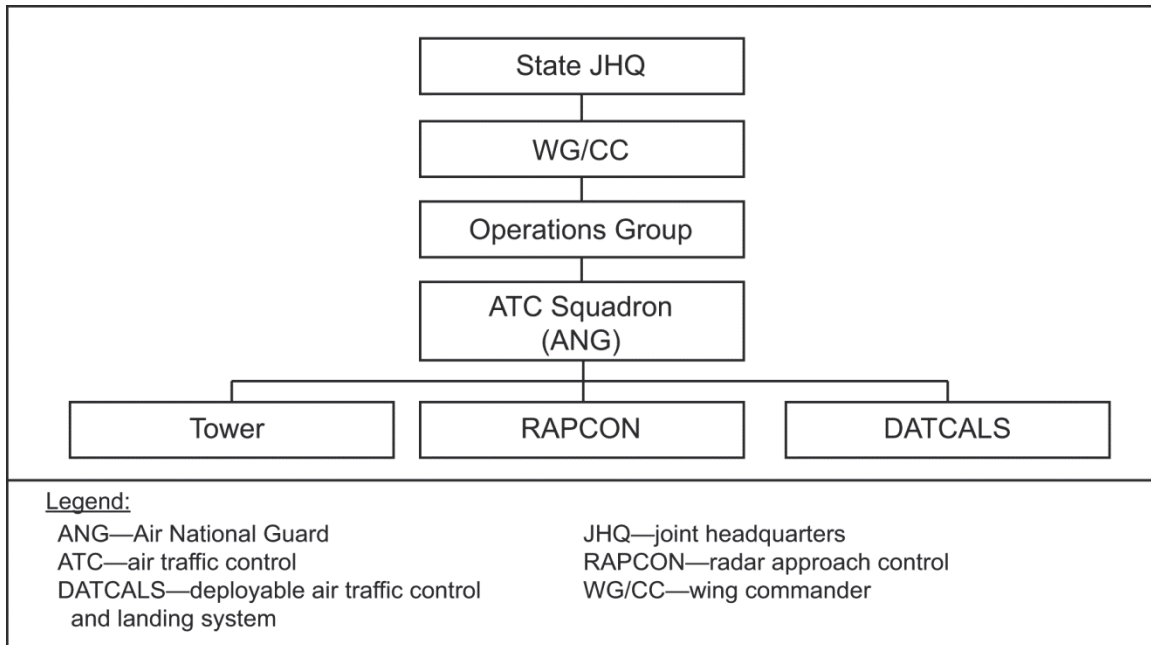
(a) CRGs. CRGs can provide an airfield opening capability to the Commander Air Force Forces regardless of service or mission of the field being opened. CRGs are scalable to meet specific tasking requirements. Their primary capabilities include limited airfield assessment, contingency response element (CRE) command and control (C2), aerial port, quick-turn aircraft maintenance, force protection; intelligence, airfield security, AM; ATC, communications, fuels; medical, financial management, contracting, and supply. CRGs are on 12-hour initial deployment requirements and will be used generally when there is limited planning time.

(b) CRE and Contingency Response Teams (CRTs). CREs and CRTs support air mobility operations in airfield opening environments and where airfields already exist. They may provide air mobility mission management, aerial port (i.e., cargo and passenger handling), weather, quick-turn aircraft maintenance, and communications.

(3) CCGs. CCGs provide expeditionary airfield operations to open or establish an airfield with an initial operating capability and enable the transition from CRG to sustainment operations.

c. Sustainment Forces. These forces are comprised of ANG and reserve units, and fixed base maintainers, air traffic controllers, and airfield managers. These units and individuals normally provide sustainment ATC after a handoff from STT, CRG, or CCG; however, in some cases, they can provide the initial ATC service at permissible locations.

(1) ANG and Reserve. ANG ATC squadrons provide deployable airfield operations systems and ATC services supporting the Air Force's wartime mission by deploying personnel, and equipment in contingency operations. ATC squadrons are primarily organized, trained, and equipped to support state emergency peacetime and Department of Defense wartime requirements. Figure 7 depicts the Air National Guard ATC structure.



**Figure 7. Air National Guard ATC Structure**

(2) Active Duty Controllers. The preponderance of controllers are located at fixed base locations and assigned to facility-specific unit type codes (UTCs) designed to support a wide range of ATC taskings. They are deployed to support DATCALs, ATC liaison, and combat airspace requirements.

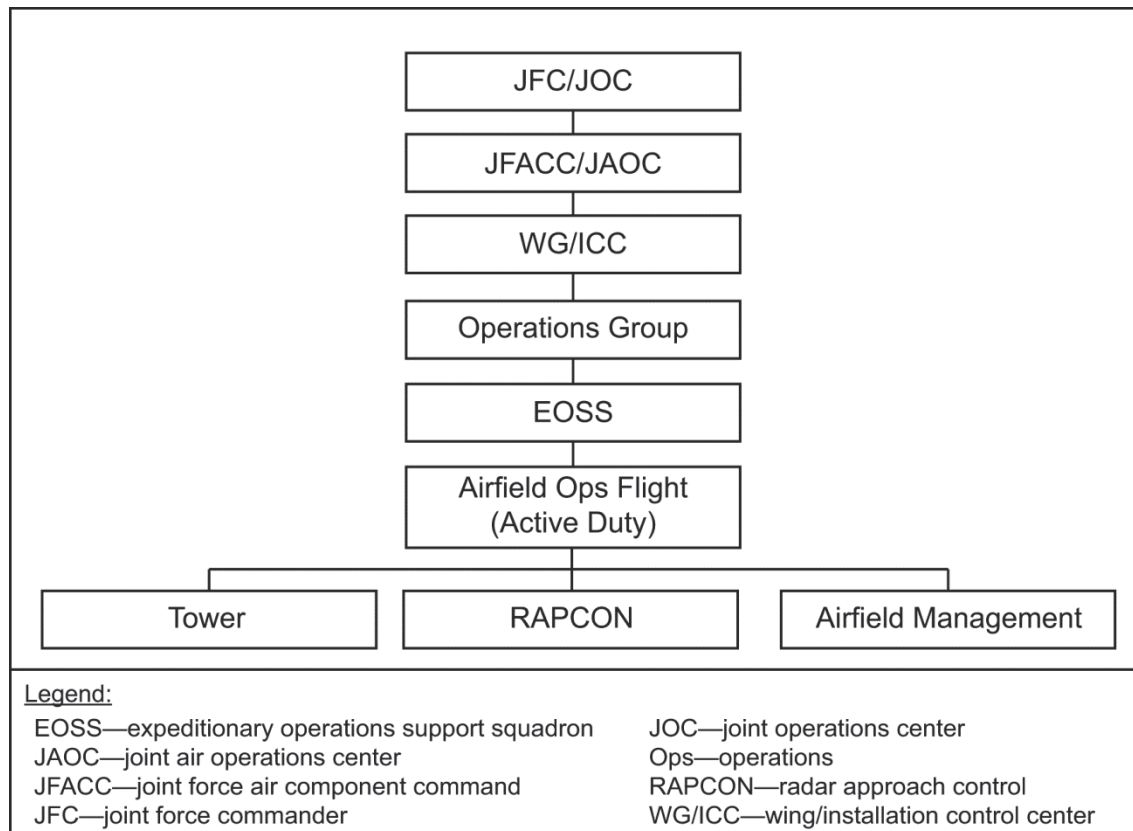
(3) Active Duty and ANG Airfield Manager. Airfield managers are located at fixed base locations and assigned to specific UTCs designed to support a wide range of taskings. They are deployed to ensure a safe and operational airfield environment, including runway, taxiways, aprons; clear zones, airfield lighting systems, navigational aids; aircraft arresting systems, signs, and markings.

d. Regional Air Movement Coordination Center (RAMCC). The RAMCC is a specialty team providing the joint force air component commander with a centralized function to deconflict military and civilian air traffic in a particular airspace control area. The RAMCC provides a safe and efficient operating environment through management of the complex interaction of military and civil aircraft attempting to access or transit the airspace control area. The RAMCC will interface with non-governmental organizations and civil users of the airspace with liaison officers from the coalition and neutral nations. For a related discussion, see Annex 3-52, *Airspace Control*, <https://doctrine.af.mil/DTM/dtmairspacecontrol.htm>.

#### **4. Organization**

a. Air Force ATC Structure. Theater-based Air Force ATC is aligned primarily within the installation control center and is normally part of the theater air control system (TACS). Controllers perform terminal and en route air traffic operations, or liaison or augmentation at HN control facilities as the mission dictates. ATC planning, training, and operating procedures reflect this concept. Requesting Air Force ATC liaisons for areas of operations is an important planning consideration. See figure 8 for the Air Force ATC structure. Generally, in a joint operations area (JOA), air traffic and

airspace C2 systems are integrated under a single multinational or joint forces airspace control authority.



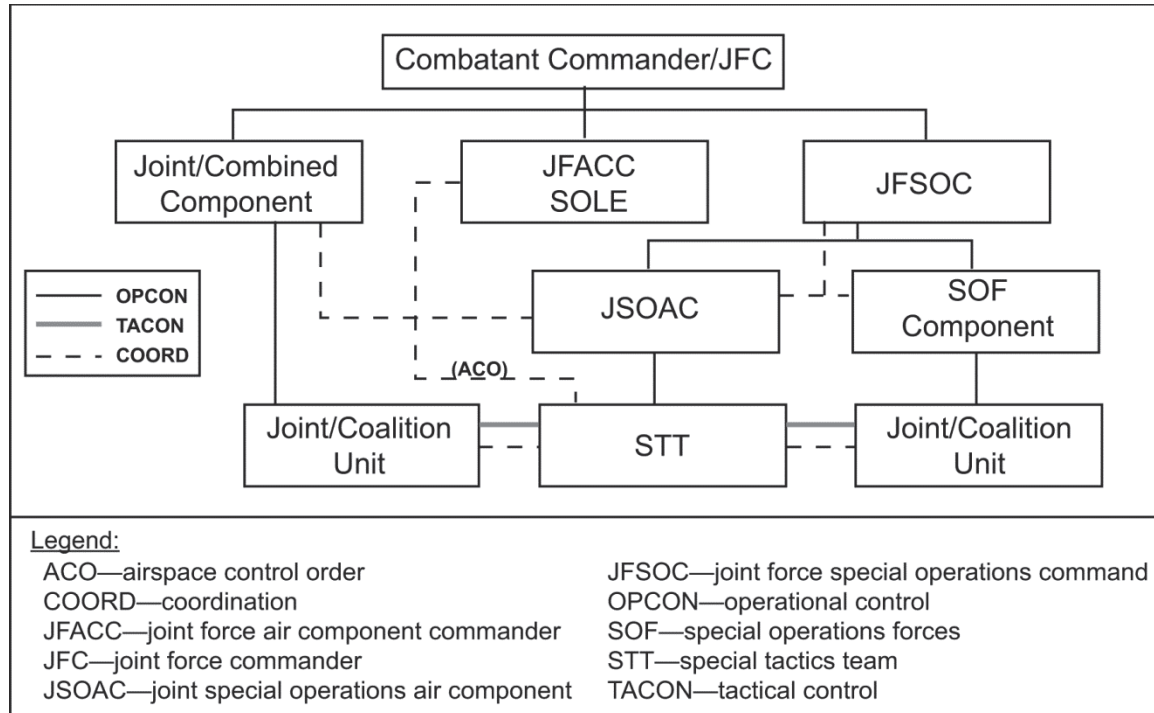
**Figure 8. Air Force ATC Structure**

b. **Liaison Support.** Air Force personnel serve as liaisons to the Federal Aviation Administration (FAA) and HN ATC organizations or facilities. They support FAA or HN controllers to meet unusual military traffic loads and to provide assistance in understanding military aircraft requirements and procedures. Furthermore, ATC liaisons deploy into theater to coordinate with deployed US ATC units, joint air operations center (JAOC), HN ATC system, US Embassy, and other ATC liaisons to deconflict air flow problems.

c. **Deployed Terminal Locations.** At the deployed base, the senior Air Force ATC representative is normally the Airfield Operations Flight commander. Working as a part of the expeditionary operations support squadron, the Airfield Operations Flight will coordinate:

- (1) Terminal instrument procedures (TERPS) and flight check support with TERPS liaison.
- (2) Any change in airfield status.
- (3) Terminal area operation procedures with the base defense operations center for integration into the base air defense and air base ground defense plans and operations.
- (4) ATC integration into the TACS in accordance with JAOC guidance contained in the airspace control plan.

d. Air Force Special Tactics Squadron (STS). STS forces will normally plan, deploy, employ, and operate as part of a joint or multinational force. STSs usually deploy to the intermediate staging base for joint employment into the area of operations or target area; however, units may employ directly from home station, if required. Figure 9 shows the typical STS C2 structure.



**Figure 9. STS C2 Structure**

## 5. Training

- Training requirements for all Air Force controllers are defined in AFI 13-204 Volume III, *Airfield Operations Procedures and Programs*. Special experience identifiers are critical to the ATC planning process because they identify controllers who meet specific ATC qualification requirements. (See tables 11 and 12.)
- Advanced Training. The major commands/numbered air forces promote joint exercises and ensure integration of the DATCALS into training exercises whenever feasible. Exercises use realistic planning, deployment, and maintenance training for DATCALS UTCs.

## 6. Equipment

For information on Air Force ATC Equipment, see Air Force Tactics, Techniques and Procedures 3-4.4, *Contingency Airfield Operations*.

## 7. Air Force ATC Points of Contact

- Air Force Flight Standards Agency: 6500 S. MacArthur Blvd, Bldg 4 Rm 240, Oklahoma City, OK 73135. DSN 884-5173 or commercial (405) 734-5173.
- 720th Special Tactics Group: 223 Cody Ave, Hurlburt Field, FL, 32544. DSN 579-3706, commercial (850) 884-3706.

<b>Table 11. Airfield Operations SEIs</b>	
<b>Enlisted</b>	
<b>Position</b>	<b>SEI</b>
Airfield Manager	368
Tower Chief Controller	955
Tower Controller	056
Tower Watch Supervisor	055
GCA Chief Controller	957
GCA Controller	053
GCA Supervisor	054
Radar Chief Controller	956
Radar Approach Controller	364
Radar Approach Control Watch Supervisor	362
Radar Final Controller	365
Air Traffic Control Radar Center	363
Airspace Management	350
Combat Airspace Management Level 1	900
Command and Control Air Operations Center	901
Terminal Instrument Procedures Specialist	357
Air Traffic Control Systems Specialist	376
<b>Officers</b>	
<b>Position</b>	<b>SEI</b>
Combat Airspace Management	9A
Airspace Management (National Airspace System oriented)	UL
Special Tactics Officer	13C
Legend: GCA—ground controlled approach      SEI—special experience identifier	

<b>Table 12. Joint Air Traffic Control–Related Air Force Specialty Codes</b>	
<b>Enlisted</b>	
<b>Description</b>	<b>Code</b>
Air Traffic Control Chief Enlisted Manager	1C100
Air Traffic Control Journeyman (“5-level”)	1C151
Air Traffic Control Craftsman (“7-level”)	1C171
Air Traffic Control Superintendent	1C191
Airfield Management Chief Enlisted Manager	1C700
Airfield Management Journeyman (“5-level”)	1C571
Airfield Management Craftsman (“7-level”)	1C771
Airfield Management Superintendent	1C791
Combat Controller	1C2
<b>Officers</b>	
<b>Description</b>	<b>Code</b>
Airfield Operations Officer	13M3



## Appendix E

### SERVICE AIR TRAFFIC CONTROL CREDENTIALS

Table 13. Service Air Traffic Control Credentials								
Function	Service							
	Army		Marine Corps		Navy		Air Force	
	Ratings	Quals	Ratings	Quals	Ratings	Quals	Ratings	Quals
<i>Control Tower Facility</i>								
<b>Tower Supervisor</b>	Shift Leader	As Designated CTO/ATC SP	CTO/As Designated	Tower Supervisor	Tower Supervisor w/CTO	Tower Sup (All)	Watch Sup	E-5/4 yrs Exp/CTO
<b>Local</b>	CTO or ATC SP	GC/FD/LC	CTO	Local	CTO	Local Control (GC & TD)	CTO	GC/FD/LC
<b>Ground</b>	CTO or ATC SP	GC/FD/LC	AWT	Ground	AWT	Ground (GC)	CTO	GC/FD/LC
<b>Flight Data</b>	CTO or ATC SP	GC/FD/LC	AWT	Tower Flight Data	AWT	Tower Data (TD)	CTO	GC/FD/LC
<b>Tower Coordinator</b>							CTO	GC/FD/LC
<i>Radar Facility</i>								
<b>Radar Supervisor</b>			ATC SP	Radar Supervisor	ATC SP	Radar Supervisor	Watch Sup	E-5/4 yrs Exp/RAPC
<b>Approach</b>			ATC SP	Approach Controller (TRACON)	ATC SP	Approach Controller (TRACON)	ATC SP	RAPC
<b>Arrival</b>	ATC SP	GCA Controller	ATC SP	Arrival Controller (RATCF)	ATC SP	Arrival Controller (RATCF)	ATC SP	RAPC
<b>Clearance Delivery</b>				Clearance Delivery		Clearance Delivery	ATC SP	RAPC
<b>GCA Supervisor</b>	ATC SP	As Designated					ATC SP	GCA Supervisor
<b>GCA/PAR</b>	ATC SP	GCA Controller	ATC SP	GCA Controller	ATC SP	GCA Controller	ATC SP	GCA Controller
<b>Flight Data</b>	ATC SP	GCA Controller	ATC SP	Radar Flight Data	ATC SP	Radar Flight Data	ATC SP	RAPC
<b>En route Control</b>			ATC SP	En route	ATC SP	En route (FACSFAC)	ATC SP	En route
<p>Legend:</p> <div style="display: flex; justify-content: space-between;"> <div> <p>ATC—air traffic control specialist</p> <p>AWT—Airman Written Test</p> <p>CTO—control tower operator</p> <p>Exp—experience</p> <p>FACSFAC—Fleet Area Control and Surveillance Facility</p> <p>FD—flight data</p> <p>GC—ground controller</p> <p>GCA—ground control approach</p> <p>LC—ground controller/flight data/local control</p> </div> <div> <p>PAR—precision approach radar</p> <p>quals—qualifications</p> <p>RAPC—terminal radar approach control (Air Force)</p> <p>RATCF—radar air traffic control facility</p> <p>SP—specialist</p> <p>Sup—supervisor</p> <p>TD—tower data</p> <p>TRACON—terminal radar approach control facility (Navy/Marine Corps)</p> </div> </div>								

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**APPENDIX F**  
**AIR TRAFFIC CONTROL HANDOVER CHECKLIST SAMPLES**

**SAMPLE ONE**

1. CONTROL # \_\_\_\_\_
2. MISSION # \_\_\_\_\_ A. CHANGE # \_\_\_\_\_ B. REF # \_\_\_\_\_
3. FREQUENCY (PRIMARY/ALTERNATE):
  - A. UHF (P) \_\_\_\_\_ (A) \_\_\_\_\_
  - B. VHF (P) \_\_\_\_\_ (A) \_\_\_\_\_
  - C. HF (P) \_\_\_\_\_ (A) \_\_\_\_\_
  - D. FM (P) \_\_\_\_\_ (A) \_\_\_\_\_
  - E. SATCOM (UP) \_\_\_\_\_ (DN) \_\_\_\_\_
4. THREAT \_\_\_\_\_
5. FIELD ELEVATION \_\_\_\_\_ FT MSL
6. DIMENSIONS

	L	W
A. RUNWAY	_____ FT	_____ FT
B. TAXIWAY	_____ FT	_____ FT
C. OVERRUN	_____ FT	_____ FT
D. HELIPAD	_____ FT	_____ FT
7. USABLE TAXIWAY Y/N
8. ACTIVE RUNWAY \_\_\_\_/\_\_\_\_ RUNWAY CROSSING POINTS (RCP) \_\_\_\_\_
9. MAXIMUM ON GROUND: A. C-130 \_\_\_\_\_ B. C-5 \_\_\_\_\_ C. MC-130 \_\_\_\_\_  
D. C-17 \_\_\_\_\_ E. HELO \_\_\_\_\_ F. OTHER \_\_\_\_\_

10. PARKING SPOTS

A. LOCATIONS

(1) FIXED-WING \_\_\_\_\_

(2) HELO \_\_\_\_\_

11. MARSHALLERS REQ:      A. FIXED-WING : Y/N      B. HELO: Y/N

12. HOT CARGO AREA      Y/N

LOCATION \_\_\_\_\_

13. REFUELING POINTS      Y/N

LOCATION \_\_\_\_\_

14. ARMING AREAS      Y/N

LOCATION \_\_\_\_\_

15. AVERAGE ON LOAD TIME \_\_\_\_\_ MIN

16. AVERAGE OFF LOAD TIME \_\_\_\_\_ MIN

17. OBSTACLES ON AIRFIELD: Y/N

A. TREES      Y/N \_\_\_\_\_ FT

B. WIRES      Y/N \_\_\_\_\_ FT

C. HOUSES      Y/N \_\_\_\_\_ FT

D. PERSONNEL      Y/N \_\_\_\_\_ FT

E. DITCHES      Y/N \_\_\_\_\_ FT

F. TERRAIN      Y/N \_\_\_\_\_ FT

G. POLES      Y/N \_\_\_\_\_ FT

18. OBSTACLES IN CLASS D AIRSPACE: Y/N

A. TREES Y/N \_\_\_\_\_ FT

B. WIRES Y/N \_\_\_\_\_ FT

C. HOUSES Y/N \_\_\_\_\_ FT

D. PERSONNEL Y/N \_\_\_\_\_ FT

E. DITCHES Y/N \_\_\_\_\_ FT

F. TERRAIN Y/N \_\_\_\_\_ FT

G. POLES Y/N \_\_\_\_\_ FT

19. BLIND SPOTS

A. VISUAL \_\_\_\_\_

B. RADIO \_\_\_\_\_

20. NAVAIDS

A. TACAN

(1) LOCATION \_\_\_\_\_

(2) FREQUENCY \_\_\_\_\_

(3) POWER SOURCE \_\_\_\_\_

B. RADAR

(1) LOCATION \_\_\_\_\_

(2) FREQUENCY \_\_\_\_\_

(3) POWER SOURCE \_\_\_\_\_

C. ILS

- (1) LOCATION \_\_\_\_\_
- (2) FREQUENCY \_\_\_\_\_
- (3) POWER SOURCE \_\_\_\_\_

D. NDB

- (1) LOCATION \_\_\_\_\_
- (2) FREQUENCY \_\_\_\_\_
- (3) POWER SOURCE \_\_\_\_\_

21. NON-RADAR HANDOFF PROCEDURES

A. HEADING \_\_\_\_\_

B. HANDOFF

- (1) TIME (hhmm) \_\_\_\_\_
- (2) FIX \_\_\_\_\_
- (3) ALT \_\_\_\_\_
- (4) FREQUENCY \_\_\_\_\_
- (5) LOCATION \_\_\_\_\_
- (6) C/S \_\_\_\_\_

22. AIRFIELD LIGHTING

- A. AMP      1      \_\_\_\_\_
- B. AMP      2      \_\_\_\_\_
- C. AMP      3      \_\_\_\_\_
- D. AMP      4      \_\_\_\_\_
- E. NONE      \_\_\_\_\_

24. TERPS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

POC \_\_\_\_\_

25. REPORTING POINTS

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

C. PATTERN \_\_\_\_\_

26. HOLDING POINTS VFR

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

C. PATTERN \_\_\_\_\_

27. HOLDING POINTS IFR

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

C. PATTERN \_\_\_\_\_

28. TRAFFIC PATTERNS

A. LEFT \_\_\_\_\_

B. RIGHT \_\_\_\_\_

C. STRAIGHT-IN \_\_\_\_\_

D. OVHD \_\_\_\_\_

E. OTHER \_\_\_\_\_

29. JETTISON AREA

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

30. BAILOUT AREA

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

31. FUEL DUMP AREA

A. LOC \_\_\_\_\_

B. ALT \_\_\_\_\_

32. NOTAMS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

33. CURRENT TRAFFIC \_\_\_\_\_

34. PROJECTED TRAFFIC \_\_\_\_\_

35. ALTERNATE AIRFIELDS \_\_\_\_\_

36. UA OPERATIONS

TYPES \_\_\_\_\_

LOCATION \_\_\_\_\_

TRAFFIC PATTERNS \_\_\_\_\_

HANDOVER PROCEDURES \_\_\_\_\_



37. FRIENDLY FORCES

AGENCY C/S MGRS FREQ KEY TAPE

A. DEPARTING ATC \_\_\_\_\_

B. ARTILLERY COLUMN \_\_\_\_\_

C. FDCD. AIR BASE DEFENSE \_\_\_\_\_

E. CRG \_\_\_\_\_

F. ALCC \_\_\_\_\_

G. AFSOB \_\_\_\_\_

H. CRASH/RESCUE \_\_\_\_\_

I. CLOSE AIR SUPPORT \_\_\_\_\_

J. MEDEVAC \_\_\_\_\_

K. TOC \_\_\_\_\_

L. US ARMY MAIN FORCES \_\_\_\_\_

M. US MARINE FORCES \_\_\_\_\_

N. US NAVY MAIN FLEET \_\_\_\_\_

O. ALLIED FORCES \_\_\_\_\_

P. AWACS \_\_\_\_\_

38. TRAFFIC INFORMATION

39. WEATHER

40. ARTILLERY

41. REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

42. PASSED TO \_\_\_\_\_ DTG \_\_\_\_\_Z INITIALS \_\_\_\_\_  
(dd/hhmm/mm/yy)

CHANGE # \_\_\_\_\_

PASSED TO \_\_\_\_\_ DTG \_\_\_\_\_Z INITIALS \_\_\_\_\_  
(dd/hhmm/mm/yy)

NOTES: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## SAMPLE TWO

1. Airfield Name: \_\_\_\_\_

2. Airfield Location: \_\_\_\_\_

LAT/LONG: \_\_\_\_\_ / \_\_\_\_\_

3. ICAO Identifier: \_\_\_\_\_

4. Airfield Frequencies:	(P) UHF/VHF	(S) UHF/VHF
ATIS	_____/_____/_____	_____/_____/_____
Approach Control	_____/_____/_____	_____/_____/_____
Tower Control	_____/_____/_____	_____/_____/_____
Ground Control	_____/_____/_____	_____/_____/_____
Clearance Delivery	_____/_____/_____	_____/_____/_____
Base Operations	_____/_____/_____	_____/_____/_____
SAR	_____/_____/_____	_____/_____/_____
WX Metro	_____/_____/_____	_____/_____/_____

5. Airfield Diagram: \_\_\_\_\_

6. Usable Runways: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

7. Usable Taxiways: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

**8. Dimensions:**

	Length	Width	Composition	PCN
Runway	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___

	Length	Width	Composition	PCN
Taxiway	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___

Helipad	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___

AV-8B Pad	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___
	_____ft	_____ft	_____	___/___/___/___/___

**9. Traffic Pattern:**

	Entry Point	Altitude	Point of Descent
Left	_____	_____	_____
Right	_____	_____	_____
Straight-in	_____	_____	_____
Overhead	_____	_____	_____
UA	_____	_____	_____
Other	_____	_____	_____

**10. Pattern Altitude:**

Turbo-Jet/Turbo-Fan	_____
Propeller-Driven	_____
Helicopter	_____
UA	_____

Altitude Remarks:

_____
_____
_____
_____

**11. NAVAIDS**      Location (Lat/Long) / Frequency / Power Source

NDB	_____ / _____ / _____
VOR	_____ / _____ / _____
TACAN	_____ / _____ / _____
VORTAC	_____ / _____ / _____
ILS	_____ / _____ / _____
GPS	_____ / _____ / _____
PAPI/VASI	_____ / _____ / _____

ASR \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

PAR \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**12. Hot Cargo Area:** Y\_\_\_ N\_\_\_

Location \_\_\_\_\_

**13. Refueling Points:** Y\_\_\_ N\_\_\_

Location \_\_\_\_\_

**14. Arming/De-arming Area:** Y\_\_\_ N\_\_\_

Location \_\_\_\_\_

**15. Parking Locations/Spots/Restrictions:**

Fixed-Wing \_\_\_\_\_

\_\_\_\_\_

Rotary-Wing \_\_\_\_\_

\_\_\_\_\_

VIP/VAL \_\_\_\_\_

\_\_\_\_\_

**16. Obstacles on the Airfield:**

Trees Location \_\_\_\_\_ Ft

Wires Location \_\_\_\_\_ Ft

Houses Location \_\_\_\_\_ Ft

Personnel Location \_\_\_\_\_ Ft

Ditches Location \_\_\_\_\_ Ft

Terrain Location \_\_\_\_\_ Ft

Poles Location \_\_\_\_\_ Ft

**17. Blind Spots:**

Visual \_\_\_\_\_

Radio \_\_\_\_\_

**18. Non-Radar Procedures:**

Heading \_\_\_\_\_

Handoff Time \_\_\_\_\_

Fix \_\_\_\_\_

Altitude \_\_\_\_\_

Frequency \_\_\_\_\_

Location \_\_\_\_\_

**19. TERPS:** \_\_\_\_\_**20. Reporting Points:**

#1

#2

#3

#4

Location \_\_\_\_\_

Altitude \_\_\_\_\_

**21. Holding Points VFR:**

#1

#2

#3

#4

Location \_\_\_\_\_

Altitude \_\_\_\_\_

Pattern \_\_\_\_\_

**22. Holding Points IFR:**

#1

#2

#3

#4

Location \_\_\_\_\_

Altitude \_\_\_\_\_

Pattern \_\_\_\_\_

**23. Bailout Area:**

	#1	#2	#3	#4
Location	_____	_____	_____	_____

Altitude	_____	_____	_____	_____
----------	-------	-------	-------	-------

**24. Jettison Area:**

	#1	#2	#3	#4
Location	_____	_____	_____	_____

Altitude	_____	_____	_____	_____
----------	-------	-------	-------	-------

**25. Fuel Dump Area:**

	#1	#2	#3	#4
Location	_____	_____	_____	_____

Altitude	_____	_____	_____	_____
----------	-------	-------	-------	-------

**26. Alternate/Divert Airfields Information:**

Name	TACAN Channel	Heading from airfield	Dist (nm)	ELEV	Fuel	Longest Runway	APCH freq	TWR freq	NAVAID

**27. Weather:** \_\_\_\_\_

**28. Remarks:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



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## **GLOSSARY**

### **PART I – ABBREVIATIONS AND ACRONYMS**

#### **A**

<b>A</b>	alternate
<b>AADC</b>	area air defense commander
<b>AATCC</b>	amphibious air traffic control center
<b>ACA</b>	airspace control authority
<b>ACE</b>	aviation combat element
<b>ACM</b>	airspace coordinating measure
<b>ACO</b>	airspace control order
<b>ACP</b>	airspace control plan
<b>ACS</b>	airspace control system
<b>AFI</b>	Air Force instruction
<b>AFMAN</b>	Air Force manual
<b>AFSOB</b>	Air Force special operations base
<b>AFTTP</b>	Air Force tactics, techniques, and procedures
<b>AGL</b>	above ground level
<b>AIC</b>	airspace information center
<b>ALCC</b>	airlift control center
<b>ALSA</b>	Air Land Sea Application [Center]
<b>alt</b>	altitude
<b>AM</b>	airfield management
<b>AMP</b>	airfield marking pattern
<b>ANG</b>	Air National Guard
<b>AO</b>	area of operations
<b>AOB</b>	airfield operations battalion
<b>APCH</b>	approach
<b>AR</b>	Army regulation
<b>ASCC</b>	Army Service component command
<b>ASR</b>	airport surveillance radar
<b>ATC</b>	air traffic control
<b>ATF</b>	amphibious task force
<b>ATIS</b>	automated terminal information service

<b>ATNAVICS</b>	air traffic navigation, integration, and coordination system
<b>ATO</b>	air tasking order
<b>ATP</b>	Army techniques publication
<b>ATS</b>	air traffic service
<b>ATTP</b>	air traffic training program
<b>AWACS</b>	airborne warning and control system (E-3A aircraft)
<b>AWT</b>	airman written test

## **B**

<b>BDOC</b>	base defense operations center
<b>BDZ</b>	base defense zone

## **C**

<b>C2</b>	command and control
<b>CAB</b>	combat aviation brigade
<b>CAC</b>	Combined Arms Center
<b>CATCC</b>	carrier air traffic control center
<b>CC</b>	commander
<b>CCG</b>	combat communications group
<b>CCMD</b>	combatant command
<b>CD&amp;I</b>	Combat Development and Integration
<b>Co</b>	company
<b>com</b>	communications
<b>cntr</b>	center
<b>COORD</b>	coordination
<b>C-RAM</b>	counter-rocket, artillery, and mortar
<b>CRE</b>	contingency response element
<b>CRG</b>	contingency response group
<b>CRF</b>	contingency response force
<b>CRT</b>	contingency response team
<b>C/S</b>	call sign
<b>CSG</b>	carrier strike group
<b>CTL</b>	commander's task list
<b>CTO</b>	control tower operator
<b>CVN</b>	aircraft carrier, nuclear

<b>D</b>	
<b>DATCALs</b>	deployable air traffic control and landing system
<b>DC</b>	Deputy Commandant
<b>dd</b>	day (2 digit)
<b>dist</b>	distance
<b>DN</b>	download
<b>DOD</b>	Department of Defense
<b>DTG</b>	date time group

## **E**

<b>elev</b>	elevation
<b>EMCON</b>	emission control
<b>EOSS</b>	expeditionary operations support squadron
<b>ESG</b>	expeditionary strike group

## **F**

<b>FAA</b>	Federal Aviation Administration
<b>FAAO</b>	Federal Aviation Administration order
<b>FACSFAC</b>	Fleet Area Control and Surveillance Facility
<b>FD</b>	flight data
<b>FM</b>	frequency modulation
<b>FOB</b>	forward operating base
<b>freq</b>	frequency
<b>ft</b>	feet

## **G**

<b>GC</b>	ground controller
<b>GCA</b>	ground controlled approach
<b>GPS</b>	global positioning system
<b>GSAB</b>	general support aviation battalion

## **H**

<b>helo</b>	helicopter
<b>HF</b>	high frequency
<b>hhmm</b>	hours minutes (4-digit time)
<b>HN</b>	host nation
<b>HQ</b>	headquarters

**HQMC** Headquarters Marine Corps

**I**

**IADS** integrated air defense system

**ICAO** International Civil Aviation Organization

**ICC** installation control center

**IFF** identification, friend or foe

**info** information

**IFR** instrument flight rules

**ILS** instrument landing system

**J, K**

**JAOC** joint air operations center

**JATC** joint air traffic control

**JFACC** joint force air component commander

**JFC** joint force commander

**JHQ** joint headquarters

**JOC** joint operations center

**JP** joint publication

**JSOAC** joint special operations air component

**JSTARS** joint surveillance target attack radar system

**L**

**L** length

**LAT** latitude

**LC** local control

**LeMay Center** Curtis E. LeMay Center for Doctrine Development and Education

**LHA/LHD** large deck amphibious assault ships

**LOC** location

**LONG** longitude

**LZ** landing zone

**M**

**MACCS** Marine air command and control system

**MACS** Marine air control squadron

<b>MACG</b>	Marine air control group
<b>MAGTF</b>	Marine air ground task force
<b>maint</b>	maintenance
<b>MATC</b>	Marine air traffic control
<b>MATCD</b>	Marine air traffic control detachment
<b>MCAS</b>	Marine Corps air station
<b>MCCDC</b>	Marine Corps Combat Development Command
<b>MCRP</b>	Marine Corps reference publication
<b>MCWP</b>	Marine Corps warfighting publication
<b>med</b>	medical
<b>MEDEVAC</b>	medical evacuation
<b>MEU</b>	Marine expeditionary unit
<b>mgmt</b>	management
<b>MGRS</b>	military grid reference system
<b>MILSTRAP</b>	military standard transaction reporting and accounting procedure
<b>MILSTRIP</b>	military standard requisitioning and issue procedure
<b>mm</b>	month (2 digit)
<b>MMT</b>	Marine air traffic control mobile team
<b>MOS</b>	military occupational specialty
<b>MSL</b>	mean sea level
<b>MTTP</b>	multi-Service tactics, techniques, and procedures
<b>MWSS</b>	Marine wing support squadron

## **N**

<b>nav</b>	navigation
<b>NAVAID(s)</b>	navigational aid(s)
<b>NAVAIR</b>	Naval Air Systems Command
<b>NDB</b>	nondirectional (radio) beacon
<b>NEC</b>	Naval Enlisted Classification
<b>NGO</b>	non-governmental organization
<b>nm</b>	nautical mile
<b>NOTAM</b>	notice to airmen
<b>NTTP</b>	Navy tactics, techniques, and procedures

<b>NVD</b>	night vision device
<b>NWDC</b>	Navy Warfare Development Command

## **O**

<b>ops</b>	operations
<b>OPCON</b>	operational control
<b>OPNAV</b>	Office of the Chief of Naval Operations
<b>OS</b>	operations specialist (USN rating)
<b>ovhd</b>	overhead

## **P**

<b>p</b>	primary
<b>PALS</b>	precision approach landing system
<b>PAPI</b>	precision approach path indicator
<b>PAR</b>	precision approach radar
<b>PCN</b>	pavement classification number
<b>POC</b>	point of contact

## **Q**

<b>quals</b>	qualifications
--------------	----------------

## **R**

<b>R2P2</b>	rapid response planning process
<b>RAMCC</b>	regional air movement coordination center
<b>RAPC</b>	radar approach control
<b>RAPCON</b>	radar approach control
<b>RATCF</b>	radar air traffic control facility
<b>RCP</b>	runway crossing points
<b>REF</b>	reference
<b>req</b>	required
<b>RL</b>	readiness level

## **S**

<b>S</b>	secondary
<b>SA</b>	situational awareness
<b>SAA</b>	senior airfield authority
<b>SATCOM</b>	satellite communications



<b>SEI</b>	special experience identifier
<b>SOF</b>	special operations forces
<b>SOP</b>	standard operating procedure
<b>SP</b>	specialist
<b>SPINS</b>	special instructions
<b>stands</b>	standards
<b>STS</b>	special tactics squadron
<b>STT</b>	special tactics team
<b>sup</b>	supervisor
<b>svcs</b>	services

## **T**

<b>TACAN</b>	tactical air navigation
<b>TACC</b>	tactical air control center (Navy)
<b>TACON</b>	tactical control
<b>TACT</b>	tactical aviation control team
<b>TACS</b>	theater air control system
<b>TACRON</b>	tactical air control squadron
<b>TAGS</b>	theater air-ground system
<b>TAOG</b>	theater airfield operations group
<b>TBD</b>	to be determined
<b>TD</b>	tower data
<b>TERPS</b>	terminal instrument procedures
<b>TM</b>	technical manual
<b>TPFDD</b>	time-phased force and deployment data
<b>TRACON</b>	terminal radar approach control facility
<b>TRADOC</b>	United States Army Training and Doctrine Command
<b>TTP</b>	tactics, techniques, and procedures
<b>twr</b>	tower

## **U**

<b>UA</b>	unmanned aircraft
<b>UHF</b>	ultra high frequency

UP	upload
US	United States
USMC	United States Marine Corps
UTC	unit type code
<b>V</b>	
VAL	visiting aircraft line
VASI	visual approach slope indicator
VFR	visual flight rules
VHF	very high frequency
VIP	very important person
VOR	VHF omni-directional radio range
VORTAC	VHF omni-directional radio range tactical air navigation aid
V/STOL	vertical and/or short takeoff and landing aircraft
<b>W</b>	
W	width
WG	wing
WX	weather
<b>X</b>	
<b>Y</b>	
yy	year (2 digit)
<b>Z</b>	

## PART II – TERMS AND DEFINITIONS

**airspace control order**—An order implementing the airspace control plan that provides the details of the approved requests for airspace coordinating measures. It is published either as part of the air tasking order or as a separate document. Also called **ACO**. (JP 1-02. SOURCE: JP 3-52)

**airspace control plan**—The document approved by the JFC 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)

**air traffic controller**—An air controller specifically trained and certified for civilian air traffic control. (JP 1-02. SOURCE: JP 3-52)

**amphibious operation**—A military operation launched from the sea by an amphibious force, embarked in ships or craft with the primary purpose of introducing a landing force ashore to accomplish the assigned mission. (JP 1-02. SOURCE: JP 3-02)

**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. Base defense zones have specific entry, exit, and identification, friend or foe procedures established. Also called **BDZ**. (JP 1-02. SOURCE: JP 3-52)

**combatant command (command authority)**—Nontransferable command authority, which cannot be delegated, of a combatant commander to perform those functions of command over assigned forces involving organizing and employing commands and forces; assigning tasks; designating objectives; and giving authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command. Also called **COCOM**. (JP 1-02. SOURCE: JP 1)

**command and control**—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Also called **C2**. [Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.] (JP 1-02. SOURCE: JP 1)

**command element**—The core element of a Marine air-ground task force (MAGTF) that is the headquarters. The command element is composed of the commander, general or executive and special staff sections, headquarters section, and requisite communications support, intelligence, and reconnaissance forces, necessary to accomplish the MAGTF's mission. The command element provides command and control, intelligence, and other support essential for effective planning and execution of operations by the other elements of the MAGTF. The command element varies in size and composition; and, in a joint or multinational environment, it may contain other Service or multinational forces assigned or attached to the MAGTF. Also called **CE**. (MCRP 5-12C)

**joint air operations center**—A jointly staffed facility established for planning, directing, and executing joint air operations in support of the joint force commander's operation or campaign objectives. Also called **JAOC**. (JP 1-02. SOURCE: JP 3-30)

**joint force air component commander**—The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for recommending the proper employment of assigned, attached, and/or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. Also called **JFACC**. (JP 1-02. SOURCE: JP 3-0)

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

**joint task force**—A joint force that is constituted and so designated by the Secretary of Defense, a combatant commander, a subunified commander, or an existing joint task force commander. Also called **JTF**. (JP 1-02. SOURCE: JP 1)

**logistics combat element**—The core element of a Marine air-ground task force (MAGTF) that is task-organized to provide the combat service support necessary to accomplish the MAGTF's mission. The logistics combat element varies in size from a small detachment to one or more Marine logistics groups. It provides supply, maintenance, transportation, general engineering, health services, and a variety of other services to the MAGTF. In a joint or multinational environment, it may also contain other Service or multinational forces assigned or attached to the MAGTF. The logistics combat element itself is not a formal command. Also called **LCE**. (MCRP 5-12C)

**Marine air command and control system**—A system that provides the aviation combat element commander with the means to command, coordinate, and control all air operations within an assigned sector and to coordinate air operations with other Services. It is composed of command and control agencies with communications electronics equipment that incorporates a capability from manual through semiautomatic control. Also called **MACCS**. (JP 1-02. SOURCE: JP 3-09.3)

**Marine expeditionary unit**—A Marine air-ground task force (MAGTF) that is constructed around an infantry battalion reinforced, a composite squadron reinforced, and a task-organized logistics combat element. It normally fulfills Marine Corps' forward sea-based deployment requirements. The Marine expeditionary unit provides an immediate reaction capability for crisis response and is capable of limited combat operations. In a joint or multinational environment, it may contain other Service or multinational forces assigned or attached to the MAGTF. Also called **MEU**. (MCRP 5-12C)

**senior airfield authority**—An individual designated by the joint force commander to be responsible for the control, operation, and maintenance of an airfield to include the runways, associated taxiways, parking ramps, land, and facilities whose proximity directly affects airfield operations. Also called **SAA**. (JP 1-02. SOURCE: JP 3-17)

**Service component command**—A command consisting of the Service component commander and all those Service forces, such as individuals, units, detachments, organizations, and installations under that command, including the support forces that have been assigned to a combatant command or further assigned to a subordinate unified command or joint task force. (JP 1-02. SOURCE: JP 1)

**vertical and/or takeoff and landing aircraft**—Vertical and/or short takeoff and landing capability for aircraft. (JP 1-02. SOURCE: N/A)

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By Order of the Secretary of the Army

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