**CHANGE**

**U.S. DEPARTMENT OF TRANSPORTATION**
FEDERAL AVIATION ADMINISTRATION
Air Traffic Organization Policy

**JO 7110.65BB**
**CHG 1**

**Effective Date:**
August 7, 2025

**SUBJ:** Air Traffic Control

**1. Purpose of This Change**. This change transmits revised pages to Federal Aviation Administration Order JO 7110.65BB, Air Traffic Control, and the Briefing Guide.

**2. Audience**. This change applies to all Air Traffic Organization (ATO) personnel and anyone using ATO directives.

**3. Where Can I Find This Change**? This change is available on the FAA's Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ and Orders & Notices website at https://www.faa.gov/regulations_policies/orders_notices/.

**4. Explanation of Policy Change**. See the Explanation of Changes attachment that has editorial corrections and changes submitted through normal procedures. The Briefing Guide lists only new or modified material, along with background.

**5. Distribution**. This change is distributed to select offices in Washington headquarters, service area offices, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, air traffic field facilities, and international aviation offices. This change is distributed electronically to all who subscribe to receive email notification through the FAA's website. All organizations are responsible for viewing, downloading, and subscribing to receive email notifications when changes occur to this order. Subscriptions to air traffic directives can be made through the Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ or directly via the following link: https://public.govdelivery.com/accounts/USAFAA/subscriber/new?topic_id=USAFAA_39.

**6. Disposition of Transmittal**. Retain this transmittal until superseded by a new basic order.

**7. Page Control Chart**. See the page control chart attachment.

CHRISTOPHER A WILBANKS
Digitally signed by CHRISTOPHER A WILBANKS
Date: 2025.05.28 17:18:01 -04'00'

Christopher Wilbanks
Acting Vice President, Mission Support Services
Air Traffic Organization

# Explanation of Changes
# Change 1

## Direct questions through appropriate facility/service center office staff to the Office of Primary Interest (OPI)

**a. 1–1–9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER**
**1–1–10. PROCEDURAL LETTERS OF AGREEMENT (LOA)**
**1–1–11. CONSTRAINTS GOVERNING SUPPLEMENTS AND PROCEDURAL DEVIATIONS**

This change updates language and aligns procedures with FAA Order JO 7210.3, Facility Operation and Administration, pertaining to requests for interpretation or clarification to this order. A process for Department of Defense requests is now incorporated. Paragraphs 1–1–10 and 1–1–11 are updated with titles and procedures that harmonize with related paragraphs in FAA Order JO 7210.3.

**b. 2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL**
**2–7–3. ALTIMETER SETTINGS GREATER THAN 31.00 INCHES MERCURY**

This change transfers the responsibility for implementing high barometric pressure Notice to Airmen (NOTAM) from Flight Standards to the Air Route Traffic Control Center (ARTCC) responsible for the affected region. This change also moves subparagraph 2−7−2g and places it in a newly created paragraph 2−7−3, Altimeter Settings Above 31.00 Inches Mercury, along with added phraseology.

**c. 3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS**
**3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS**
**3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS**
**3–10–5. LANDING CLEARANCE**

This change incorporates permitted LAHSO operations under FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), into explicit guidance for controllers in this order. Procedures are aligned between the paragraphs that use or reference LAHSO and include additional and/or new phraseology and examples for LAHSO.

Paragraph 3–7–2, Taxi and Ground Movement Operations, includes content previously contained only in the LAHSO order that permits ground traffic to cross downfield of an arriving aircraft that has acknowledged a land and hold short clearance. Phraseology and examples are added to this paragraph for the required traffic exchange.

Paragraph 3–9–8, Intersecting Runway/Intersecting Flight Path Operations, relocates LAHSO to a new subparagraph for separating a departing aircraft on an intersecting runway. The location of the new language and figure no longer labels the aircraft that will land and hold short a “preceding aircraft” as land and hold short operations are simultaneous.

Paragraph 3–10–4, Intersecting Runway/Intersecting Flight Path Operations, is significantly revised to cover the operational application. All administrative or operational requirements for conducting LAHSO contained in the LAHSO order are removed. Arrival procedures and application of LAHSO have been clarified with reduced verbiage. The phraseology for the land and hold short clearance has been removed and relocated to paragraph 3–10–5. Additional figures are included for a visual representation of LAHSO.

Paragraph 3–10–5, Landing Clearance, includes the land and hold short clearance as a separate subparagraph as this is a variation of the landing clearance and is required for all applications of LAHSO. Phraseology and examples of the land and hold short clearance are relocated to this paragraph and expanded. The structure is revised to provision a change to the landing runway as a separate subparagraph.

This change cancels GENOT 24/36 N JO 7110.793, effective October 16, 2024.

**d. 3–10–3. SAME RUNWAY SEPARATION**

This change replaces the B737 aircraft referenced in subparagraph b2 EXAMPLE 3 with an aircraft category representative of the guidance provided in subparagraph b.

**e. 4–8–1. APPROACH CLEARANCE**

This change introduces procedures when a Standard Terminal Arrival Route (STAR) or Air Traffic Service (ATS) route connects to an Instrument Approach Procedure (IAP) at an initial approach fix (IAF) or intermediate fix (IF). This change includes a minimum distance requirement prior to the fix where the approach procedure begins for the crew to complete the connection, and it also introduces new phraseology unique for this approach clearance. Lastly, this change includes revised Terminal Arrival Area (TAA) figures accounting for other TAA types supporting other than RNAV approach procedures. This change cancels and incorporates N JO 7110.794, which was effective February 20, 2025.

**f. 4–8–9. MISSED APPROACH**

This change moves requirement language previously located in subparagraph 4–8–9, Missed Approach, Note 1, into the body of the paragraph with a revised subparagraph structure for clarity. Paragraph references are updated.

**g. 4–8–11. PRACTICE APPROACHES**

This change clarifies that a delay in providing practice instrument approach services is not meant to be indefinite, and that the pilot must be informed of the delay expected. Emphasis has been placed on controller workload and traffic conditions for authorizing practice instrument approaches. This change standardizes controller responsibility for visual flight rules (VFR) practice instrument approaches to terminate at the missed approach point unless a published missed approach procedure has been authorized. Mission Support's interpretation, FAA Order 7210.3Y, Paragraph 10–4–5b, VFR Practice Approaches, dated March 23, 2015, is canceled. Related procedures for instrument flight rules (IFR) separation to VFR aircraft conducting practice instrument approaches are revised in conjunction with this change in FAA Order JO 7210.3, paragraph 6–4–4, Practice Instrument Approaches, and paragraph 10–4–5, Practice Instrument Approaches.

**h. 5–4–10. EN ROUTE FOURTH LINE DATA BLOCK USAGE**

This change adds guidance for celestial navigation coordination format when using "CELNAV" in the fourth line and deletes the example that is no longer needed.

**i. 7–5–1. AUTHORIZATION**

This change adds content to delineate when Special Visual Flight Rules (SVFR) is authorized pertaining to when pilots are operating above or beneath a ceiling, that SVFR is not authorized when operating within a Class E extension area and clarifies that SVFR is authorized based on the reported weather conditions at the airport for which the surface area is designated.

**j. 8–7–3. LONGITUDINAL SEPARATION**
**8–8–3. LONGITUDINAL SEPARATION**
**8–9–3. LONGITUDINAL SEPARATION**
**8–10–3. LONGITUDINAL SEPARATION**

This change will add a 20 nautical mile longitudinal separation standard with a required 192 second Automatic Dependent Surveillance−Contract (ADS−C) rate. Also added is a requirement for the ADS−C periodic contract rate to be established before applying Performance-based Communication and Surveillance (PBCS) longitudinal separation standards. This change incorporates and cancels Notice JO 7110.795, Longitudinal Separation, effective February 21, 2025.

**k. 13–2–1. DESCRIPTION**
**13–2–5. WEATHER DEVIATION TOOL**

This change adds policy for use of the Advanced Technologies Oceanic Procedures (ATOP) weather deviation tool as a decision support tool, allowing controllers the ability to issue weather deviation clearances

to aircraft when using required navigation performance (RNP) distance–based longitudinal separation in United States-delegated oceanic airspace. This change incorporates and cancels Notice JO 7110.796, Decision Support Tools, effective February 21, 2025.

**l. Editorial Changes**

Editorial changes include correcting a reference to FAA Order JO 8020.16 in paragraph 2–1–27; correcting a reference to FAA Order JO 7210.3 in paragraph 2–1–29; correcting a reference in subparagraph 5–9–5b; adding verbiage to paragraph 5–9–4, Arrival Instructions, to include all types of instrument approaches; updating references to AJT–2 to AJT–1 to reflect a recent reorganization; updating a reference to FAA Order JO 7110.67 in paragraph 5–2–24; removing references to Simplified Directional Facilities (SDF); updating the abbreviation of NWSOP in paragraph 1–2–6; a universal change replacing all prior references to the term Gulf of Mexico with the term Gulf of America in accordance with Executive Order 14172; and a universal change updating the term Notice to Air Missions (NOTAM) to Notice to Airmen (NOTAM).

**m. Entire publication**

Additional editorial/format changes were made where necessary. Revision bars were not used because of the insignificant nature of these changes.

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# Chapter 1. General

## Section 1. Introduction

### 1–1–1. PURPOSE OF THIS ORDER

This order prescribes air traffic control procedures and phraseology for use by persons providing air traffic control services. Controllers are required to be familiar with the provisions of this order that pertain to their operational responsibilities and to exercise their best judgment if they encounter situations that are not covered by it.

### 1–1–2. AUDIENCE

This order applies to all ATO personnel and anyone using ATO directives.

### 1–1–3. WHERE TO FIND THIS ORDER

This order is available on the FAA's Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ and Orders & Notices website at https://www.faa.gov/regulations_policies/orders_notices/.

### 1–1–4. WHAT THIS ORDER CANCELS

FAA Order JO 7110.65AA, Air Traffic Control, dated April 20, 2023, and all changes to it are canceled.

### 1–1–5. EXPLANATION OF CHANGES

The significant changes to this order are identified in the Explanation of Changes page(s). It is advisable to retain the page(s) throughout the duration of the basic order.

### 1–1–6. EFFECTIVE DATES AND SUBMISSIONS FOR CHANGES

**a.** This order and its changes are scheduled to be published to coincide with AIRAC dates. (See TBL 1–1–1.)

**b.** The "Cutoff Date for Completion" in the table below refers to the deadline for a proposed change to be fully coordinated and signed. Change initiators must submit their proposed changes well in advance of this cutoff date to meet the publication effective date. The process to review and coordinate changes often takes several months after the change is initially submitted.

***TBL 1–1–1***
**Publication Schedule**

| Basic or Change | Cutoff Date for Completion | Effective Date of Publication |
|---|---|---|
| JO 7110.65BB | 9/5/24 | 2/20/25 |
| Change 1 | 2/20/25 | 8/7/25 |
| Change 2 | 8/7/25 | 1/22/26 |
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## 1–1–7. DELIVERY DATES

**a.** This order will be available on the FAA's website 30 days prior to its effective date.

**b.** If an FAA facility **has not** received the order/changes at least 30 days before the above effective dates, the facility must notify its service area office distribution officer.

**c.** If a military facility **has not** received the order/changes at least 30 days before the above effective dates, the facility must notify its appropriate military headquarters. (See TBL 1–1–2.)

***TBL 1–1–2***
**Military Distribution Contacts**

| Military Headquarters | DSN | Commercial |
|---|---|---|
| U.S. Army USAASA | 656–4868 | (703) 806–4868 |
| U.S. Air Force HQ AFFSA | 884-5509 | (405) 734-5509 |
| U.S. Navy CNO (N980A) | 224–2638 | (703) 614–2638 |

## 1–1–8. RECOMMENDATIONS FOR PROCEDURAL CHANGES

The office of primary responsibility (OPR) for this order is:

FAA Headquarters, Mission Support Services
Policy (AJV-P)
600 Independence Avenue, SW
Washington, DC 20597

**a.** Personnel should submit recommended changes in procedures to facility management.

**b.** Recommendations from other sources should be submitted through appropriate FAA, military, or industry/user channels.

**c.** Proposed changes must be submitted electronically to 9-AJV-P-HQ-Correspondence@faa.gov. The submission should include a description of the recommended change, and the proposed language to be used in the order.

***NOTE–***
*For details on the submission process as well as additional AJV–P processing responsibilities, please see FAA Order JO 7000.5, Procedures for Submitting Changes to Air Traffic Control Publications.*

**d.** Procedural changes will not be made to this order until the operational system software has been adapted to accomplish the revised procedures.

## 1–1–9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER

**a.** Requests from Air Traffic Services (AJT) field personnel must be submitted to the applicable Service Area Director of Air Traffic Operations, as follows:

**1.** The request must be submitted in writing by an Air Traffic Manager to the District General Manager, who will forward the request in writing to the Service Area Director of Air Traffic Operations through the Operations Support Group (OSG).

**2.** The Service Area Director of Air Traffic Operations must review the submission to determine if an interpretation or a clarification is required.

**(a)** If more than one interpretation of the language can be inferred, the request for interpretation must be submitted in writing to the Director, Policy (AJV−P).

**(b)** If it is determined a clarification of the language is required, the request is returned to the OSG. The OSG must provide a written clarification response to the requestor and forward a copy of the response to the Service Area Director of Air Traffic Operations and AJV−P.

**b.** Requests from System Operations Services (AJR) personnel must be submitted in writing through appropriate channels to the applicable Systems Operations Services Director. The receiving Systems Operations Services Director will review and, if deemed valid, submit the request to AJV−P for response.

**c.** Requests from all other FAA ATO service units, Lines of Business or Staff Offices must be submitted in writing through appropriate leadership channels to AJV−P.

**d.** Requests from DoD personnel must be submitted in writing to the respective Military Service Headquarters, via the appropriate chain of command. The Military Service Headquarters will review and, if deemed valid, submit the request to AJV−P.

**e.** All non-FAA/DoD requests may be submitted directly to AJV−P.

**f.** All requests directed to AJV−P in accordance with subparagraphs a through e above must be sent to the AJV−P correspondence mailbox at: 9-AJV-P-HQ-Correspondence@faa.gov.

**g.** Published interpretations for this order may be accessed through the MyFAA employee website via: https://my.faa.gov/org/linebusiness/ato/missionsupport/air−traffic−control−interpretations.

## 1−1−10. PROCEDURAL LETTERS OF AGREEMENT (LOAs)

Procedures/minima which are applied jointly or otherwise require the cooperation or concurrence of more than one facility/organization must be documented in a letter of agreement. LOAs only supplement this order. Any minima they specify must not be less than that specified herein unless appropriate military authority has authorized application of reduced separation between military aircraft. Procedures for LOA development, review, and approval are covered in FAA Order JO 7210.3, Chapter 4, Section 3.

***REFERENCE−***
*FAA Order JO 7110.65, Para 2−1−1, ATC Service.*

## 1−1−11. WAIVERS TO THIS ORDER

**a.** Exceptional or unusual requirements may dictate procedural deviations or supplementary procedures to this order. The approval of waivers to air traffic procedures is covered in FAA Order JO 7210.3, Facility Operation and Administration, Chapter 19, Section 7.

**b.** If military operations or facilities are involved, prior approval by the following appropriate headquarters is required for subsequent interface with FAA. (See TBL 1−1−3.)

***TBL 1–1–3***
**Military Operations Interface Offices**

| Department | Address |
|---|---|
| Department of the Navy | Department of the Navy<br>Chief of Naval Operations<br>N980A, NAATSEA<br>2000 Navy Pentagon (5D453)<br>Washington, D.C. 20350–2000 |
| Department of the Air Force | HQ AFFSA<br>5316 S. Douglas Blvd<br>Bldg 8400, Room 232<br>Oklahoma City, OK 73150 |
| Department of the Army | Director<br>USAASA (MOAS–AS)<br>9325 Gunston Road, Suite N–314<br>Ft. Belvoir, VA 22060–5582 |

***NOTE–***
*Terminal: Headquarters Air Force Flight Standards Agency is the approval authority for any USAF procedures or minima that differ from those specified herein and that involve military aircraft only.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–12, Military Procedures.*
*FAA Order JO 7110.65, Para 3–1–3 , Use of Active Runways.*

## 1–1–12. SAFETY MANAGEMENT SYSTEM (SMS)

Safety is fundamental to the provision of air traffic management and communication, navigation, and surveillance services. The ATO develops, implements, and maintains processes, tools, and guiding principles within the framework of a Safety Management System (SMS) to ensure that performance-based NAS safety goals are achieved. The ATO SMS gives the responsibility for owning and executing the SMS to all employees at all levels of the ATO. All ATO employees must strive not only to maintain safety in the NAS for those services they provide but also to continuously improve the ATO SMS. Direction regarding the ATO SMS and its application is found in FAA Order JO 1000.37, Air Traffic Organization Safety Management System. Additional information pertaining to ATO SMS requirements and processes can be obtained by visiting the SMS Toolbox, emailing the Office of Safety and Technical Training (AJI) at 9-AJI-SMS@faa.gov, or contacting the service center Quality Control Group. SMS training is available for all employees via eLMS. Additional courses along with Technical Training for SMS Practitioners and SMS Facilitators are available from AJI.

## 1–1–13. REFERENCES TO FAA NON-AIR TRAFFIC ORGANIZATIONS

When references are made to regional office organizations that are not part of the Air Traffic Organization (Communications Center, Flight Standards, Airport offices, etc.), the facility should contact the FAA region where the facility is physically located—not the region where the facility's service area office is located.

## 1–1–14. DISTRIBUTION

**a.** This order is distributed to selected offices in Washington headquarters, regional offices, service area offices, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, and to all air traffic field facilities and international aviation field offices.

**b.** This order is distributed electronically to all who subscribe to receive email notifications through the FAA's website. All organizations are responsible for viewing, downloading, and subscribing to receive email notifications when changes occur to this order. Subscriptions to air traffic directives can be made through the Air Traffic Plans and Publications website at https://www.faa.gov/air_traffic/publications/ or directly via the following link: https://public.govdelivery.com/accounts/USAFAA/subscriber/new?topic_id=USAFAA_39.

| Abbreviation | Meaning |
|---|---|
| CNS . . . . . | Continuous |
| CPDLC . . . . . | Controller Pilot Data Link Communications |
| CPME . . . . . | Calibration Performance Monitor Equipment |
| CTA . . . . . | Control Area |
| CTRD . . . . . | Certified Tower Radar Display |
| CVFP . . . . . | Charted Visual Flight Procedure |
| CWA . . . . . | Center Weather Advisory |
| DETRESFA . | Distress Phase code (Alerting Service) |
| DH . . . . . | Decision height |
| DL . . . . . | Departure List |
| DME . . . . . | Distance measuring equipment compatible with TACAN |
| DOE . . . . . | Department of Energy |
| DP . . . . . | Instrument Departure Procedure |
| DR . . . . . | Dead reckoning |
| DRT . . . . . | Diversion recovery tool |
| DSR . . . . . | Display System Replacement |
| DTAS . . . . . | Digital Terminal Automation Systems |
| DTM . . . . . | Digital Terrain Map |
| DVFR . . . . . | Defense Visual Flight Rules |
| DVRSN . . . . | Diversion |
| EA . . . . . | Electronic Attack |
| EAS . . . . . | En Route Automation System |
| EDCT . . . . . | Expect Departure Clearance Time |
| EDST . . . . . | En Route Decision Support Tool |
| EFC . . . . . | Expect further clearance |
| EFVS . . . . . | Enhanced Flight Vision System |
| ELDB . . . . . | Enhanced Limited Data Block |
| ELP . . . . . | Emergency Landing Pattern |
| ELT . . . . . | Emergency locator transmitter |
| EoR . . . . . | Established on RNP |
| EOVM . . . . . | Emergency obstruction video map |
| EOS . . . . . | End Service |
| ERAM . . . . . | En Route Automation Modernization |
| ERIDS . . . . . | En Route Information Display System |
| ERT . . . . . | Embedded route text |
| ETA . . . . . | Estimated time of arrival |
| FAA . . . . . | Federal Aviation Administration |
| FANS . . . . . | Future Air Navigation System |
| FDB . . . . . | Full Data Block |
| FDIO . . . . . | Flight Data Input/Output |
| FDP . . . . . | Flight data processing |
| FICON . . . . . | Field Condition |
| FIR . . . . . | Flight Information Region |
| FL . . . . . | Flight level |
| FLIP . . . . . | Flight Information Publication |
| FLY . . . . . | Fly or flying |
| FMS . . . . . | Flight Management System |
| FSM . . . . . | Flight Schedule Monitor |
| FSS . . . . . | Flight Service Station |
| GCA . . . . . | Ground controlled approach |
| GNSS . . . . . | Global Navigation Satellite System |
| GPD . . . . . | Graphics Plan Display |
| GPS . . . . . | Global Positioning System |
| GS . . . . . | Ground stop |
| HF/RO . . . . . | High Frequency/Radio Operator |
| HIRL . . . . . | High intensity runway lights |
| IAFDOF . . . . | Inappropriate Altitude for Direction of Flight |
| ICAO . . . . . | International Civil Aviation Organization |
| IDENT . . . . . | Aircraft identification |
| IDS . . . . . | Information Display System |
| IFR . . . . . | Instrument flight rules |
| IFSS . . . . . | International Flight Service Station |
| ILS . . . . . | Instrument Landing System |
| INCERFA . . . | Uncertainty Phase code (Alerting Service) |
| INREQ . . . . . | Information request |
| INS . . . . . | Inertial Navigation System |
| IR . . . . . | IFR military training route |
| IRU . . . . . | Inertial Reference Unit |
| ISR . . . . . | Increased Separation Required |
| ITWS . . . . . | Integrated Terminal Weather System |
| JATO . . . . . | Jet assisted takeoff |
| LAHSO . . . . | Land and Hold Short Operations |
| LOA . . . . . | Letter of Agreement |
| LLWAS . . . . . | Low Level Wind Shear Alert System |
| LLWAS NE . | Low Level Wind Shear Alert System Network Expansion |
| LLWAS–RS . | Low Level Wind Shear Alert System Relocation/Sustainment |
| L/MF . . . . . | Low/medium frequency |
| LORAN . . . . | Long Range Navigation System |
| Mach . . . . . | Mach number |
| MALS . . . . . | Medium Intensity Approach Light System |
| MALSR . . . . | Medium Approach Light System with runway alignment indicator lights |

| Abbreviation | Meaning |
|---|---|
| MAP . . . . . | Missed approach point |
| MARSA . . . . | Military authority assumes responsibility for separation of aircraft |
| MCA . . . . . | Minimum crossing altitude |
| MCI . . . . . | Mode C Intruder |
| MDA . . . . . | Minimum descent altitude |
| MDM . . . . . | Main display monitor |
| MEA . . . . . | Minimum en route (IFR) altitude |
| MEARTS . . . | Micro En Route Automated Radar Tracking System |
| METAR . . . . | Aviation Routine Weather Report |
| MIA . . . . . | Minimum IFR altitude |
| MIAWS . . . . | Medium Intensity Airport Weather System |
| MIRL . . . . . | Medium intensity runway lights |
| MNPS . . . . . | Minimum Navigation Performance Specification |
| MNT . . . . . | Mach Number Technique |
| MOA . . . . . | Military operations area |
| MOCA . . . . . | Minimum obstruction clearance altitude |
| MRA . . . . . | Minimum reception altitude |
| MSAW . . . . . | Minimum Safe Altitude Warning |
| MSL . . . . . | Mean sea level |
| MTI . . . . . | Moving target indicator |
| MTR . . . . . | Military training route |
| MVA . . . . . | Minimum vectoring altitude |
| NADIN . . . . . | National Airspace Data Interchange Network |
| NAR . . . . . | National Automation Request |
| NAS . . . . . | National Airspace System |
| NAT . . . . . | ICAO North Atlantic Region |
| NAT HLA . . . | North Atlantic High Level Airspace |
| NBCAP . . . . | National Beacon Code Allocation Plan |
| NDB . . . . . | Nondirectional radio beacon |
| NHOP . . . . . | National Hurricane Operations Plan |
| NM . . . . . | Nautical mile |
| NOAA . . . . . | National Oceanic and Atmospheric Administration |
| NOPAC . . . . | North Pacific |
| NORAD . . . . | North American Aerospace Defense Command |
| NOS . . . . . | National Ocean Service |
| NOTAM . . . . | Notice to Airmen |
| NOWGT . . . . | No weight. The weight class or wake category has not been determined |
| NRP . . . . . | North American Route Program |

| Abbreviation | Meaning |
|---|---|
| NRR . . . . . | Nonrestrictive Route |
| NRS . . . . . | Navigation Reference System |
| NTZ . . . . . | No transgression zone |
| NWS . . . . . | National Weather Service |
| NWSOP . . . . | National Winter Season Operations Plan |
| ODALS . . . . | Omnidirectional Approach Lighting System |
| ODP . . . . . | Obstacle Departure Procedure |
| OID . . . . . | Operator Interface Device |
| OS . . . . . | Operations Supervisor |
| OTR . . . . . | Oceanic transition route |
| PAPI . . . . . | Precision Approach Path Indicators |
| PAR . . . . . | Precision approach radar |
| PBCT . . . . . | Proposed boundary crossing time |
| P/CG . . . . . | Pilot/Controller Glossary |
| PDC . . . . . | Pre–Departure Clearance |
| PIREP . . . . . | Pilot Weather Report |
| PPI . . . . . | Plan position indicator |
| PTP . . . . . | Point–to–point |
| PVD . . . . . | Plan view display |
| RA . . . . . | Radar Associate |
| RAIL . . . . . | Runway alignment indicator lights |
| RAPCON . . . | Radar Approach Control facility (USAF, USN, and USMC) |
| RATCF . . . . . | Radar Air Traffic Control Facility (USN and USMC) |
| RBS . . . . . | Radar bomb scoring |
| RCC . . . . . | Rescue Coordination Center |
| RCLS . . . . . | Runway Centerline System |
| RCR . . . . . | Runway condition reading |
| RE . . . . . | Recent (used to qualify weather phenomena such as rain, e.g., recent rain = RERA) |
| REIL . . . . . | Runway end identifier lights |
| RF . . . . . | Radius–to–Fix |
| RNAV . . . . . | Area navigation |
| RNP . . . . . | Required Navigation Performance |
| RTQC . . . . . | Real–Time Quality Control |
| RVR . . . . . | Runway visual range |
| RVSM . . . . . | Reduced Vertical Separation Minimum |
| RwyCC . . . . . | Runway Condition Codes |
| RwyCR . . . . . | Runway Condition Report |
| SAA . . . . . | Special Activity Airspace |

# Chapter 2. General Control

## Section 1. General

### 2–1–1. ATC SERVICE

**a.** The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.

**b.** In addition to its primary purpose, the ATC system also:

**1.** Provides a safe, orderly, and expeditious flow of air traffic.

**2.** Supports National Security and Homeland Defense missions.

**c.** The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:

**1.** Volume of traffic.

**2.** Frequency congestion.

**3.** Quality of surveillance.

**4.** Controller workload.

**5.** Higher priority duties.

**6.** The physical inability to scan and detect situations falling in this category.

**d.** Controllers must provide air traffic control service in accordance with the procedures and minima in this order, except when one or more of the following conditions exists:

**1.** A deviation is necessary to conform with ICAO Documents, National Rules of the Air, or special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions or:

***NOTE–***
*Pilots are required to abide by CFRs or other applicable regulations regardless of the application of any procedure or minima in this order.*

**2.** Other procedures/minima are prescribed in a letter of agreement, FAA directive, or a military document, or:

***NOTE–***
*These procedures may include altitude reservations, air refueling, fighter interceptor operations, law enforcement, etc.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 1–1–10, Procedural Letters of Agreement (LOAs).*

**3.** A deviation is necessary to assist an aircraft when an emergency has been declared.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–6, Safety Alert.*
*FAA Order JO 7110.65, Chapter 10, Emergencies.*
*FAA Order JO 7110.65, Para 5–1–4, Merging Target Procedures.*

***INTERPRETATION–***
*7110.65, 2–1–1 c, ATC Service; Emergencies and 10–1–1 d, Emergency Determinations (6–11–2015)*

**e.** Air Traffic Control services are not provided for model aircraft operating in the NAS or to any UAS operating in the NAS at or below 400ft AGL.

***NOTE–***
**1.** *This does not prohibit ATC from providing services to civil and public UAS.*

**2.** *The provisions of this paragraph apply to model aircraft operating at any altitude. For all other UAS, this paragraph applies only to those UAS operating entirely at or below 400ft AGL.*

***REFERENCE–***
*P/CG Term – Model Aircraft.*

## 2–1–2. DUTY PRIORITY

**a.** Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgment must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–6, Safety Alert.*

***NOTE–***
*Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgment based on the facts and circumstances known to them. That action which is most critical from a safety standpoint is performed first.*

**b.** Provide support to national security and homeland defense activities to include, but not be limited to, reporting of suspicious and/or unusual aircraft/pilot activities.

***REFERENCE–***
*FAA Order JO 7610.4, Sensitive Procedures and Requirements for Special Operations.*

**c.** Provide and/or solicit weather information in accordance with procedures and requirements outlined in this order.

***NOTE–***
*Controllers are responsible to become familiar with and stay aware of current weather information needed to perform ATC duties.*

**d.** Provide additional services to the extent possible, contingent only upon higher priority duties and other factors including limitations of radar, volume of traffic, frequency congestion, and workload.

## 2–1–3. PROCEDURAL PREFERENCE

**a.** Use automation procedures in preference to nonautomation procedures when workload, communications, and equipment capabilities permit.

**b.** Use automation procedures that provide closed loop clearances in preference to open loop clearances to promote operational advantage for time–based management (TBM) when workload permits. (e.g., a QU route pick that anticipates length of vector and includes the next fix that ties into the route of flight.)

**c.** Use radar separation in preference to nonradar separation when it will be to an operational advantage and workload, communications, and equipment permit.

**d.** Use nonradar separation in preference to radar separation when the situation dictates that an operational advantage will be gained.

***NOTE–***
*One situation may be where vertical separation would preclude excessive vectoring.*

## 2–1–4. OPERATIONAL PRIORITY

It is recognized that traffic flow may affect the controller's ability to provide priority handling. However, without compromising safety, good judgment must be used in each situation to facilitate the most expeditious movement of priority aircraft. Provide air traffic control service to aircraft on a "first come, first served" basis as circumstances permit, except the following:

**b.** Use the word “expedite” only when prompt compliance is required to avoid the development of an imminent situation. If an “expedite” climb or descent clearance is issued by ATC, and subsequently the altitude to maintain is changed or restated without an expedite instruction, the expedite instruction is canceled.

**c.** In either case, if time permits, include the reason for this action.

## 2–1–6. SAFETY ALERT

Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude that, in your judgment, places it in unsafe proximity to terrain, obstructions, or other aircraft. Once the pilot informs you action is being taken to resolve the situation, you may discontinue the issuance of further alerts. Do not assume that because someone else has responsibility for the aircraft that the unsafe situation has been observed and the safety alert issued; inform the appropriate controller.

***NOTE–***
**1.** *The issuance of a safety alert is a first priority (see paragraph 2–1–2, Duty Priority) once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft. Conditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations. While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized.*

**2.** *Recognition of situations of unsafe proximity may result from MSAW/E–MSAW, automatic altitude readouts, Conflict/Mode C Intruder Alert, observations on a PAR scope, or pilot reports.*

**3.** *Once the alert is issued, it is solely the pilot’s prerogative to determine what course of action, if any, will be taken.*

**a.** Terrain/Obstruction Alert. Immediately issue/initiate an alert to an aircraft if you are aware the aircraft is at an altitude that, in your judgment, places it in unsafe proximity to terrain and/or obstructions. Issue the alert as follows:

***PHRASEOLOGY–***
*LOW ALTITUDE ALERT (call sign),*

*CHECK YOUR ALTITUDE IMMEDIATELY.*

*and, if the aircraft is not yet on final approach,*

*THE (as appropriate) MEA/MVA/MOCA/MIA IN YOUR AREA IS (altitude).*

***REFERENCE–***
*P/CG Term – Final Approach – IFR*

**b.** Aircraft Conflict/Mode C Intruder Alert. Immediately issue/initiate an alert to an aircraft if you are aware of another aircraft at an altitude that you believe places them in unsafe proximity. If feasible, offer the pilot an alternate course of action. When an alternate course of action is given, end the transmission with the word “immediately.”

***PHRASEOLOGY–***
*TRAFFIC ALERT (call sign) (position of aircraft) ADVISE YOU TURN LEFT/RIGHT (heading),*

*and/or*

*CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.*

***EXAMPLE–***
*“Traffic Alert, Cessna Three Four Juliett, 12’o clock, 1 mile advise you turn left immediately.”*
*or*
*“Traffic Alert, Cessna Three-Four Juliett, 12’o clock, 1 mile advise you turn left and climb immediately.”*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–13–1, Conflict Alert (CA) and Mode C Intruder (MCI) Alert.*
*FAA Order JO 7110.65, Para 5–13–2, En Route Minimum Safe Altitude Warning (E–MSAW).*
*FAA Order JO 7110.65, Para 5–14–6, CA/MCI.*
*FAA Order JO 7110.65, Para 5–2–21, Altitude Filters.*
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

## 2–1–7. INFLIGHT EQUIPMENT MALFUNCTIONS

**a.** When a pilot reports an inflight equipment malfunction, determine the nature and extent of any special handling desired.

***NOTE–***
*Inflight equipment malfunctions include partial or complete failure of equipment, which may affect either safety, separation standards, and/or the ability of the flight to proceed under IFR, or in Reduced Vertical Separation Minimum (RVSM) airspace, in the ATC system. Controllers may expect reports from pilots regarding VOR, TACAN, ADF, GPS, RVSM capability, or low frequency navigation receivers, impairment of air–ground communications capability, or other equipment deemed appropriate by the pilot (e.g., airborne weather radar). Pilots should communicate the nature and extent of any assistance desired from ATC.*

**b.** Provide the maximum assistance possible consistent with equipment, workload, and any special handling requested.

**c.** Relay to other controllers or facilities who will subsequently handle the aircraft, all pertinent details concerning the aircraft and any special handling required or being provided.

## 2–1–8. MINIMUM FUEL

If an aircraft declares a state of "minimum fuel," inform any facility to whom control jurisdiction is transferred of the minimum fuel problem and be alert for any occurrence which might delay the aircraft en route.

***NOTE–***
*Use of the term "minimum fuel" indicates recognition by a pilot that his/her fuel supply has reached a state where, upon reaching destination, he/she cannot accept any undue delay. This is not an emergency situation but merely an advisory that indicates an emergency situation is possible should any undue delay occur. A minimum fuel advisory does not imply a need for traffic priority. Common sense and good judgment will determine the extent of assistance to be given in minimum fuel situations. If, at any time, the remaining usable fuel supply suggests the need for traffic priority to ensure a safe landing, the pilot should declare an emergency and report fuel remaining in minutes.*

## 2–1–9. REPORTING ESSENTIAL FLIGHT INFORMATION

Report as soon as possible to the appropriate FSS, airport manager's office, ARTCC, approach control facility, operations office, or military operations office any information concerning components of the NAS or any flight conditions which may have an adverse effect on air safety.

***NOTE–***
*FSSs are responsible for classifying and disseminating Notices to Airmen.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–3–3, Timely Information.*
*FAA Order JO 7210.3, Para 3–1–2, Periodic Maintenance.*
*USN, See OPNAVINST 3721.30.*

## 2–1–10. NAVAID MALFUNCTIONS

**a.** When an aircraft reports a ground–based NAVAID malfunction, take the following actions:

**1.** Request a report from a second aircraft.

**2.** If the second aircraft reports normal operations, continue use and inform the first aircraft. Record the incident on FAA Form 7230–4 or appropriate military form.

**1.** To aircraft conducting ASR, PAR, or radar monitored approaches, before the aircraft starts descent on final approach.

**2.** To aircraft conducting instrument approaches and remaining on the radar facility's frequency, before the aircraft passes the outer marker/final approach fix.

***PHRASEOLOGY–***
*WHEELS SHOULD BE DOWN.*

## 2–1–26. SUPERVISORY NOTIFICATION

Ensure supervisor/controller-in-charge (CIC) is aware of conditions which impact sector/position operations including, but not limited to, the following:

**a.** Weather.

**b.** Equipment status.

**c.** Potential sector overload.

**d.** Emergency situations.

**e.** Special flights/operations.

**f.** Aircraft/pilot activity, including unmanned aircraft system (UAS) operation that is considered suspicious, as prescribed in FAA Order JO 7610.4, paragraph 7–3–1, and for information more specific to UAS, FAA Order JO 7210.3, paragraph 2–1–34.

***REFERENCE–***
*P/CG Term – Suspicious UAS.*

## 2–1–27. POSSIBLE PILOT DEVIATION NOTIFICATION

When it appears that the actions of a pilot constitute a pilot deviation, notify the pilot, workload permitting.

***PHRASEOLOGY–***
*(Identification) POSSIBLE PILOT DEVIATION ADVISE YOU CONTACT (facility) AT (telephone number).*

***NOTE–***
*The phraseology example identified in this paragraph is commonly referred to as the "Brasher Notification" or "Brasher Warning," which gives flight crews the opportunity to make note of the occurrence for future reference. The use of these terms during direct pilot communications is not appropriate.*

***REFERENCE–***
*FAA Order JO 8020.16, Air Traffic Organization Aircraft Accident and Aircraft Incident Notification, Investigation, and Reporting, Chapter 12, Para 3, Air Traffic Facility Responsibilities.*

## 2–1–28. TCAS RESOLUTION ADVISORIES

**a.** When an aircraft under your control jurisdiction informs you that it is responding to a TCAS Resolution Advisory (RA), do not issue control instructions that are contrary to the RA procedure that a crew member has advised you that they are executing. Provide safety alerts regarding terrain or obstructions and traffic advisories for the aircraft responding to the RA and all other aircraft under your control jurisdiction, as appropriate.

**b.** Unless advised by other aircraft that they are also responding to a TCAS RA, do not assume that other aircraft in the proximity of the responding aircraft are involved in the RA maneuver or are aware of the responding aircraft's intended maneuvers. Continue to provide control instructions, safety alerts, and traffic advisories as appropriate to such aircraft.

***NOTE–***
*When notified by the pilot of an RA, the controller is not prohibited from issuing traffic advisories and safety alerts.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–6, Safety Alert.*
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

**c.** Once the responding aircraft has begun a maneuver in response to an RA, the controller is not responsible for providing approved separation between the aircraft that is responding to an RA and any other aircraft, airspace, terrain or obstructions. Responsibility for approved separation resumes when one of the following conditions is met:

**1.** The responding aircraft has returned to its assigned altitude, or

**2.** A crew member informs you that the TCAS maneuver is completed and you observe that approved separation has been reestablished, or

**3.** The responding aircraft has executed an alternate clearance and you observe that approved separation has been reestablished.

***NOTE–***
**1.** *AC 120−55, Air Carrier Operational Approval and Use of TCAS II, suggests pilots use the following phraseology to notify controllers during TCAS events. When a TCAS RA may affect an ATC clearance, inform ATC when beginning the maneuver, or as soon as workload permits.*

***EXAMPLE–***
**1.** *"New York Center, United 321, TCAS RA."*

***NOTE–***
**2.** *When the RA has been resolved, the flight crew should advise ATC they are returning to their previously assigned clearance or subsequent amended clearance.*

***EXAMPLE–***
**2.** *"New York Center, United 321, clear of conflict, returning to assigned altitude."*

## 2−1−29. RVSM OPERATIONS

RVSM operations are conducted in RVSM airspace that is defined as any airspace between FL 290 and FL 410 inclusive, where eligible aircraft are separated vertically by 1,000 feet. Controller responsibilities must include but not be limited to the following:

**a.** Non-RVSM aircraft operating in RVSM airspace.

**1.** Ensure non-RVSM aircraft are not permitted in RVSM airspace unless they meet the criteria of excepted aircraft and are previously approved by the operations supervisor/CIC. The following aircraft are excepted: DoD, DoD-certified aircraft operated by NASA (T38, F15, F18, WB57, S3, and U2 aircraft only), MEDEVAC, manufacturer aircraft being flown for development/certification, and Foreign State aircraft. These exceptions are accommodated on a workload or traffic-permitting basis.

***NOTE–***
*The operations supervisor/CIC is responsible for system acceptance of a non-RVSM aircraft beyond the initial sector-to-sector coordination following the pilot request to access the airspace. Operations supervisor/CIC responsibilities are defined in FAA Order JO 7210.3, Chapter 6, Section 8, Reduced Vertical Separation Minimum (RVSM).*

**2.** Ensure sector-to-sector coordination for all non-RVSM aircraft operations within RVSM airspace.

**3.** Inform the operations supervisor/CIC when a non-RVSM exception flight is denied clearance into RVSM airspace or is removed from RVSM airspace.

**b.** Non−RVSM aircraft transitioning RVSM airspace.

Ensure that operations supervisors/CICs are made aware when non-RVSM aircraft are transitioning through RVSM airspace.

**c.** Apply appropriate separation standards and remove any aircraft from RVSM airspace that advises it is unable RVSM due to equipment while en route.

**d.** Use "negative RVSM" in all verbal ground-to-ground communications involving non-RVSM aircraft while cleared to operate within RVSM airspace.

# Section 4. Radio and Interphone Communications

## 2–4–1. RADIO COMMUNICATIONS

Use radio frequencies for the special purposes for which they are intended. A single frequency may be used for more than one function except as follows:

*TERMINAL*. When combining positions in the tower, do not use ground control frequency for airborne communications.

***NOTE–***
*Due to the limited number of frequencies assigned to towers for the ground control function, it is very likely that airborne use of a ground control frequency could cause interference to other towers or interference to your aircraft from another tower. When combining these functions, it is recommended combining them on local control. The ATIS may be used to specify the desired frequency.*

## 2–4–2. MONITORING

Monitor interphones and assigned radio frequencies continuously.

***NOTE–***
*Although all FAA facilities, including RAPCONs and RATCFs, are required to monitor all assigned frequencies continuously, USAF facilities may not monitor all unpublished discrete frequencies.*

## 2–4–3. PILOT ACKNOWLEDGMENT/READ BACK

Ensure pilots acknowledge all Air Traffic Clearances and ATC Instructions. When a pilot reads back an Air Traffic Clearance or ATC Instruction:

**a.** Ensure that items read back are correct.

**b.** Ensure the read back of hold short instructions, whether a part of taxi instructions or a LAHSO clearance.

**c.** Ensure pilots use call signs and/or registration numbers in any read back acknowledging an Air Traffic Clearance or ATC Instruction.

***NOTE–***
**1.** *ATC Clearance/Instruction Read Back guidance for pilots in the AIM states:*
***a.*** *Although pilots should read back the "numbers," unless otherwise required by procedure or controller request, pilots may acknowledge clearances, control instructions, or other information by using "Wilco," "Roger," "Affirmative," or other words or remarks with their aircraft identification.*
***b.*** *Altitudes contained in charted procedures, such as departure procedures, instrument approaches, etc., need not be read back unless they are specifically stated by the controller.*
***c.*** *Initial read back of a taxi, departure or landing clearance should include the runway assignment, including left, right, center, etc. if applicable.*

**2.** *Until a pilot acknowledges a controller's clearance or instruction, a controller cannot know if a pilot will comply with the clearance or remain as previously cleared.*

***EXAMPLE–***
*"Climbing to Flight Level three three zero, United Twelve" or "November Five Charlie Tango, roger, cleared to land runway four left."*

***REFERENCE–***
*P/CG Term – Air Traffic Clearance.*
*P/CG Term – ATC Instructions.*
*FAA Order JO 7110.65, Para 3–7–2, Taxi and Ground Movement Operations.*
*FAA Order JO 7110.65, Para 10–4–4, Communications Failure.*
*AIM, Para 4–2–3, Contact Procedures.*
*AIM, Para 4–4–7, Pilot Responsibility upon Clearance Issuance.*
*AIM, Para 6–4–1, Two-way Radio Communications Failure.*
*Federal Register, April 1, 1999 14 CFR Part 91, Pilot Responsibility for Compliance with ATC Clearances and Instructions.*

## 2–4–4. AUTHORIZED INTERRUPTIONS

As necessary, authorize a pilot to interrupt his/her communications guard.

***NOTE–***
*Some users have adopted procedures to ensure uninterrupted receiving capability with ATC when a pilot with only one operative communications radio must interrupt his/her communications guard because of a safety related problem requiring airborne communications with his/her company. In this event, pilots will request approval to abandon guard on the assigned ATC frequency for a mutually agreeable time period. Additionally, they will inform controllers of the NAVAID voice facility and the company frequency they will monitor.*

## 2–4–5. AUTHORIZED TRANSMISSIONS

Transmit only those messages necessary for air traffic control or otherwise contributing to air safety.

***REFERENCE–***
*FAA Order JO 7210.3, Para 3–2–2, Authorized Messages Not Directly Associated with Air Traffic Services.*

## 2–4–6. FALSE OR DECEPTIVE COMMUNICATIONS

Take action to detect, prevent, and report false, deceptive, or phantom controller communications to an aircraft or controller. The following must be accomplished when false or deceptive communications occur:

**a.** Correct false information.

**b.** Broadcast an alert to aircraft operating on all frequencies within the area where deceptive or phantom transmissions have been received.

***EXAMPLE–***
*"Attention all aircraft. False ATC instructions have been received in the area of Long Beach Airport. Exercise extreme caution on all frequencies and verify instructions."*

**c.** Collect pertinent information regarding the incident.

**d.** Notify the operations supervisor of the false, deceptive, or phantom transmission and report all relevant information pertaining to the incident.

## 2–4–7. AUTHORIZED RELAYS

**a.** Relay operational information to aircraft or aircraft operators as necessary. Do not agree to handle such messages on a regular basis. Give the source of any such message you relay.

**b.** Relay official FAA messages as required.

***NOTE–***
*The FAA Administrator and Deputy Administrator will sometimes use code phrases to identify themselves in air-to-ground communications as follows:*
*Administrator: "SAFEAIR ONE."*
*Deputy Administrator: "SAFEAIR TWO."*

***EXAMPLE–***
*"Miami Center, Jetstar One, this is SAFEAIR ONE, (message)."*

**c.** Relay operational information to military aircraft operating on, or planning to operate on IRs.

## 2–4–8. RADIO MESSAGE FORMAT

Use the following format for radio communications with an aircraft:

**a.** Sector/position on initial radio contact:

**1.** Identification of aircraft.

**2.** Identification of ATC unit.

# Section 7. Altimeter Settings

## 2–7–1. CURRENT SETTINGS

**a.** Current altimeter settings must be obtained from direct-reading instruments or directly from weather reporting stations.

***REFERENCE–***
*FAA Order JO 7210.3, Chapter 2, Section 10, Wind/Altimeter Information.*

**b.** If a pilot requests the altimeter setting in millibars, ask the nearest weather reporting station for the equivalent millibar setting.

**c.** USAF/USA. Use the term "Estimated Altimeter" for altimeter settings reported or received as estimated.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–1, Departure Information.*
*FAA Order JO 7110.65, Para 3–10–1, Landing Information.*
*FAA Order JO 7110.65, Para 4–7–10, Approach Information.*

## 2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL

**a.** *TERMINAL.* Identify the source of an altimeter setting when issued for a location other than the aircraft's departure or destination airport.

**b.** *EN ROUTE.* Identify the source of all altimeter settings when issued.

***PHRASEOLOGY–***
*(If the altimeter is one hour old or less),*
*THE (facility name) ALTIMETER (setting).*

*or*

*(If the altimeter is more than one hour old),*
*THE (facility name) ALTIMETER (setting) MORE THAN ONE HOUR OLD.*

**c.** Issue the altimeter setting:

**1.** To en route aircraft at least one time while operating in your area of jurisdiction. Issue the setting for the nearest reporting station along the aircraft's route of flight:

***NOTE–***
*14 CFR section 91.121(1) requires that the pilot set his/her altimeter to the setting of a station along his/her route of flight within 100 miles of the aircraft if one is available. However, issuance of the setting of an adjacent station during periods that a steep gradient exists will serve to inform the pilot of the difference between the setting he/she is using and the pressure in the local area and better enable him/her to choose a more advantageous setting within the limitations of 14 CFR section 91.121.*

**2.** *TERMINAL.* To all departures. Unless specifically requested by the pilot, the altimeter setting need not be issued to local aircraft operators who have requested this omission in writing or to scheduled air carriers.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–1, Departure Information.*

**3.** *TERMINAL.* To arriving aircraft on initial contact or as soon as possible thereafter. The tower may omit the altimeter if the aircraft is sequenced or vectored to the airport by the approach control having jurisdiction at that facility.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–10, Approach Information.*
*FAA Order JO 7110.65, Para 5–10–2, Approach Information.*

**4.** *EN ROUTE.* For the destination airport to arriving aircraft, approximately 50 miles from the destination, if an approach control facility does not serve the airport.

**5.** In addition to the altimeter setting provided on initial contact, issue changes in altimeter setting to aircraft executing a nonprecision instrument approach as frequently as practical when the official weather report includes the remarks "pressure falling rapidly."

**d.** If the altimeter setting must be obtained by the pilot of an arriving aircraft from another source, instruct the pilot to obtain the altimeter setting from that source.

***NOTE–***
**1.** *The destination altimeter setting, whether from a local or remote source, is the setting upon which the instrument approach is predicated.*

**2.** *Approach charts for many locations specify the source of altimeter settings as non-FAA facilities, such as UNICOMs.*

**e.** When issuing clearance to descend below the lowest usable flight level, advise the pilot of the altimeter setting of the weather reporting station nearest the point the aircraft will descend below that flight level. Local directives may delegate this responsibility to an alternate sector when Optimized Profile Descents (OPD) commence in sectors consisting entirely of Class A airspace.

**f.** Department of Defense (DoD) aircraft that are authorized to operate in restricted areas, MOAs, and ATC assigned airspace areas on "single altimeter settings" (CFR Exemption 2861A), must be issued altimeter settings in accordance with standard procedures while the aircraft are en route to and from the restricted areas, MOAs, and ATC assigned airspace areas.

***NOTE–***
*The DoD is responsible for conducting all "single altimeter setting" operations within the boundaries of MOAs, restricted areas, and ATCAAs. Under an LOA, the DoD provides safe altitude clearance between DoD aircraft and other aircraft operating within, above, and below the MOAs, restricted areas, and ATCAAs with appropriate clearance of terrain.*

***REFERENCE–***
*FAA Order JO 7610.14, Appendix 4, Document 4, Grant of Exemption No. 2861A – Single Altimeter Setting For Frequent Transit of FL180.*

## 2–7–3. ALTIMETER SETTINGS GREATER THAN 31.00 INCHES MERCURY

When the barometric pressure is greater than 31.00 inches mercury (31" Hg), issue the altimeter setting and phraseology that high barometric pressure procedures are in effect:

**a.** En Route/Arrivals. Advise pilots to leave altimeter set to 31.00 until reaching final approach fix.

***PHRASEOLOGY–***
*ALTIMETER (setting) HIGH BAROMETRIC PRESSURE RESTRICTIONS IN EFFECT, SET THREE ONE ZERO ZERO UNTIL REACHING THE FINAL APPROACH FIX.*

**b.** Departures. Advise pilots to set altimeter to 31.00 prior to reaching any mandatory/crossing altitude or 1,500 feet AGL, whichever is lower.

***PHRASEOLOGY–***
*ALTIMETER (setting) HIGH BAROMETRIC PRESSURE RESTRICTIONS IN EFFECT, SET THREE ONE ZERO ZERO PRIOR TO REACHING (mandatory/crossing altitude or 1,500 feet AGL, whichever is lower).*

**c.** Affected Air Route Traffic Control Centers (ARTCC) must request, via the U.S. NOTAM Office (USNOF), that a high barometric pressure NOTAM be issued for flying in regions where barometric pressure is above or forecast to be above 31" Hg.

***NOTE–***
**1.** *Altitude reporting transponders transmit the pressure altitude (Flight Level) of the aircraft. The altimeter setting does not directly affect the transponder reported altitude. ATC automation applies the current altimeter setting to the pressure altitude received and displays the altitude of the aircraft above mean sea level (MSL).*

**2.** *With a barometric pressure of 31.30" Hg and the aircraft's altimeter set at 31.00" Hg, the Mode C transponder will transmit the actual altitude of 3,300, feet while the altimeter only shows 3,000 feet. This will occur unless local directives authorize entering the altimeter setting 31.00" Hg into the ATC automation regardless of the actual barometric pressure.*

**3.** *Airports unable to accurately measure barometric pressures above 31.00" Hg. will report the barometric pressure as "missing" or "in excess of 31.00" Hg." Flight operations to or from those airports are restricted to VFR weather conditions.*

# Chapter 3. Airport Traffic Control– Terminal

## Section 1. General

### 3–1–1. PROVIDE SERVICE

Provide airport traffic control service based only upon observed or known traffic and airport conditions.

***NOTE–***
*When operating in accordance with CFRs, it is the responsibility of the pilot to avoid collision with other aircraft. However, due to the limited space around terminal locations, traffic information can aid pilots in avoiding collision between aircraft operating within Class B, Class C, or Class D surface areas and the terminal radar service areas, and transiting aircraft operating in proximity to terminal locations.*

### 3–1–2. PREVENTIVE CONTROL

Provide preventive control service only to aircraft operating in accordance with a letter of agreement. When providing this service, issue advice or instructions only if a situation develops which requires corrective action.

***NOTE–***
**1.** *Preventive control differs from other airport traffic control in that repetitious, routine approval of pilot action is eliminated. Controllers intervene only when they observe a traffic conflict developing.*

**2.** *Airfield Operating instructions, Memorandums of Understanding, or other specific directives used exclusively by the Department of Defense (DoD) satisfies the criteria in paragraph 3–1–2 above.*

### 3–1–3. USE OF ACTIVE RUNWAYS

The local controller has primary responsibility for operations conducted on the active runway and must control the use of those runways. Positive coordination and control is required as follows:

***NOTE–***
*Exceptions may be authorized only as provided in paragraph 1–1–11, Waivers to This Order, and FAA Order JO 7210.3, Facility Operation and Administration, paragraph 10–1–7, Use of Active Runways, where justified by extraordinary circumstances at specific locations.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 1–1–11, Waivers to This Order.*
*FAA Order JO 7210.3, Para 10–1–7, Use of Active Runways.*

**a.** Ground control must obtain approval from local control before authorizing an aircraft or a vehicle to cross or use any portion of an active runway. The coordination must include the point/intersection at the runway where the operation will occur.

***PHRASEOLOGY–***
*CROSS (runway) AT (point/intersection).*

**b.** When the local controller authorizes another controller to cross an active runway, the local controller must verbally specify the runway to be crossed and the point/intersection at the runway where the operation will occur preceded by the word “cross.”

***PHRASEOLOGY–***
*CROSS (runway) AT (point/intersection).*

**c.** The ground controller must advise the local controller when the coordinated runway operation is complete. This may be accomplished verbally or through visual aids as specified by a facility directive.

**d.** *USA/USAF/USN NOT APPLICABLE.* Authorization for aircraft/vehicles to taxi/proceed on or along an active runway, for purposes other than crossing, must be provided via direct communications on the appropriate

local control frequency. This authorization may be provided on the ground control frequency after coordination with local control is completed for those operations specifically described in a facility directive.

***NOTE–***
*The USA, USAF, and USN establish local operating procedures in accordance with, respectively, USA, USAF, and USN directives.*

**e.** The local controller must coordinate with the ground controller before using a runway not previously designated as active.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–4, Coordination Between Local and Ground Controllers.*

## 3–1–4. COORDINATION BETWEEN LOCAL AND GROUND CONTROLLERS

Local and ground controllers must exchange information as necessary for the safe and efficient use of airport runways and movement areas. This may be accomplished via verbal means, flight progress strips, other written information, or automation displays. As a minimum, provide aircraft identification and applicable runway/intersection/taxiway information as follows:

**a.** Ground control must notify local control when a departing aircraft has been taxied to a runway other than one previously designated as active.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–3, Use of Active Runways.*
*FAA Order JO 7210.3, Para 10–1–6, Selecting Active Runways.*

**b.** Ground control must notify local control of any aircraft taxied to an intersection for takeoff. This notification may be accomplished by verbal means or by flight progress strips.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures.*

**c.** When the runways in use for landing/departing aircraft are not visible from the tower or the aircraft using them are not visible on radar, advise the local/ground controller of the aircraft's location before releasing the aircraft to the other controller.

## 3–1–5. VEHICLES/EQUIPMENT/PERSONNEL NEAR/ON RUNWAYS

**a.** When established in a letter of agreement (LOA), vehicles, equipment, and personnel in two–way communications with ATC may be authorized to operate in the runway safety area (RSA) up to the edge of the runway surface, which includes when aircraft are arriving, departing, or taxiing along the runway.

***PHRASEOLOGY–***
*PROCEED AS REQUESTED; (and if necessary, additional instructions or information).*

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–3–1, Letters of Agreement.*

***NOTE–***
*DoD–only airfields—See Service Manual and/or local operating procedures for guidance on aerodrome operations and LOA requirements.*

**b.** Ensure that the runway to be used is free of all known ground vehicles, equipment, and personnel before a departing aircraft starts takeoff or a landing aircraft crosses the runway threshold.

***NOTE–***
*"PROCEED AS REQUESTED" is not approved phraseology for instructing aircraft, vehicles, equipment, or personnel to cross or operate on a runway.*

***NOTE–***
*Establishing hold lines/signs is the responsibility of the airport manager. Standards for surface measurements, markings, and signs are contained in the following Advisory Circulars; AC 150/5300–13, Airport Design; AC 150/5340–1, Standards for Airport Markings, and AC 150/5340–18, Standards for Airport Sign Systems. The operator is responsible to properly position the aircraft, vehicle, or equipment at the appropriate hold line/sign or designated point. The requirements in paragraph 3–1–12, Visually Scanning Runways, remain valid as appropriate.*

**(a)** An aircraft/vehicle has completed crossing prior to an arriving aircraft crossing the landing threshold, or

***REFERENCE–***
*P/CG Term – Clear of the Runway.*

**(b)** An aircraft/vehicle must not cross the runway holding position markings until an arriving aircraft has completed landing roll and:

**(1)** Acknowledged the instruction to exit the runway prior to the point at which the crossing is intended, or

**(2)** Acknowledged the instruction to hold short of the point at which the crossing is intended, or

**(3)** Visually observed exiting the runway prior to the point at which the crossing is intended, or

**(4)** Passed the point at which the crossing is intended.

**3.** LAHSO application: When the arriving aircraft has acknowledged a clearance to land and hold short in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), an aircraft/vehicle may cross the runway beyond the arriving aircraft's hold short point. The crossing aircraft/vehicle must be informed the landing traffic will hold short of the intersection.

***PHRASEOLOGY–***
*(crossing instructions) LANDING TRAFFIC WILL HOLD SHORT OF THE INTERSECTION.*

***EXAMPLE–***
*"United Forty-Eight, Cross Runway Seven Left at taxiway Whiskey, landing traffic will hold short of the intersection."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–10–5, Landing Clearance.*

**h.** Request a read back of runway hold short instructions when it is not received from the pilot/vehicle operator.

***PHRASEOLOGY–***
*READ BACK HOLD INSTRUCTIONS.*

***EXAMPLE–***
**1.** *"American Four Ninety Two, Runway Three Six Left, taxi via taxiway Charlie, hold short of Runway Two Seven Right."*

*or*

*"American Four Ninety Two, Runway Three Six Left, taxi via Charlie, hold short of Runway Two Seven Right."*

*"American Four Ninety Two, Roger."*

*"American Four Ninety Two, read back hold instructions."*

**2.** *"Cleveland Tower, American Sixty Three is ready for departure."*

*"American Sixty Three, hold short of Runway Two Three Left, traffic one mile final."*

*"American Sixty Three, Roger."*

*"American Sixty Three, read back hold instructions."*

**3.** *"OPS Three proceed via taxiway Charlie hold short of Runway Two Seven."*

*or*

*"OPS Three proceed via Charlie hold short of Runway Two Seven."*

*"OPS Three, Roger."*

*"OPS Three, read back hold instructions."*

***NOTE–***
*Read back hold instructions phraseology may be initiated for any point on a movement area when the controller believes the read back is necessary.*

**i.** Issue progressive taxi/ground movement instructions when:

**1.** A pilot/operator requests.

**2.** The specialist deems it necessary due to traffic or field conditions, e.g., construction or closed taxiways.

**3.** Necessary during reduced visibility, especially when the taxi route is not visible from the tower.

***NOTE–***
*Progressive instructions may include step–by–step directions and/or directional turns.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–7–4, Runway Proximity.*
*FAA Order JO 7110.65, Para 3–11–1, Taxi and Ground Movement Operation.*

**j.** Issue instructions to expedite a taxiing aircraft or a moving vehicle.

***PHRASEOLOGY–***
*TAXI WITHOUT DELAY (traffic if necessary).*

*EXIT/PROCEED/CROSS (runway/taxiway) at (runway/taxiway) WITHOUT DELAY.*

**k.** Issue instructions to aircraft/vehicle to hold short of an approach/departure hold area when required.

***PHRASEOLOGY–***
*HOLD SHORT OF (runway) APPROACH*

*HOLD SHORT OF (runway)DEPARTURE*

## 3–7–3. GROUND OPERATIONS

Avoid clearances which require:

**a.** Super or heavy aircraft to use greater than normal taxiing power.

**b.** Small aircraft or helicopters to taxi in close proximity to taxiing or hover-taxi helicopters.

***NOTE–***
*Use caution when taxiing smaller aircraft/helicopters in the vicinity of larger aircraft/helicopters. Controllers may use the words rotor wash, jet blast, or prop wash when issuing cautionary advisories.*

***EXAMPLE–***
*"Follow Boeing 757, Runway Three–Six Left, taxi via Alpha, Caution jet blast."*

*or*

*When appropriate,*

*"Follow CH–53, Runway Two–One, taxi via Bravo, Caution rotor wash."*

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para 10 and Para 11.*

## 3–7–4. RUNWAY PROXIMITY

Hold a taxiing aircraft or vehicle clear of the runway as follows:

**a.** Instruct aircraft or vehicle to hold short of a specific runway.

**b.** Instruct aircraft or vehicle to hold at a specified point.

**c.** Issue traffic information as necessary.

***PHRASEOLOGY–***
*HOLD SHORT OF/AT (runway number or specific point), (traffic or other information).*

***NOTE–***
*Establishing hold lines/signs is the responsibility of the airport manager. The standards for surface measurements, markings, and signs are contained in AC 150/5300−13, Airport Design; AC 150/5340−1, Standards for Airport Markings, and AC 150/5340−18, Standards for Airport Sign Systems. The operator is responsible for properly positioning the aircraft, vehicle, or equipment at the appropriate hold line/sign or designated point. The requirements in paragraph 3−1−12, Visually Scanning Runways, remain valid as appropriate.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3−7−2, Taxi and Ground Movement Operations.*
*FAA Order JO 7110.65, Para 3−10−10, Altitude Restricted Low Approach.*
*FAA Order JO 7110.65, Para 3−1−5, Vehicles/Equipment/Personnel on Runways.*

## 3−7−5. PRECISION APPROACH CRITICAL AREA

**a.** Aircraft and vehicle access to the ILS critical area must be controlled to ensure the integrity of ILS course signals whenever the official weather observation is a ceiling of less than 800 feet or visibility less than 2 miles. Unless the arriving aircraft has reported the runway in sight or is circling to land to another runway, do not authorize vehicles/aircraft to operate in or over the critical area, except as specified in subparagraph a1, whenever an arriving aircraft is inside the ILS outer marker (OM) or the fix used in lieu of the OM.

***PHRASEOLOGY–***
*HOLD SHORT OF (runway) ILS CRITICAL AREA.*

***NOTE–***
*When available weather sources such as METARs/SPECI/PIREPs/controller observations indicate weather conditions are changing from VFR to IFR and are deteriorating, actions are expected to be taken to update the official weather observation.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2−6−2 PIREP Solicitation and Dissemination.*
*FAA Order JO 7110.65, Para 2−6−3, Reporting Weather Conditions.*
*FAA Order JO 7110.65, Para 2−6−5, Disseminating Official Weather Information.*
*FAA Order JO 7210.3, Para 2−9−2, Receipt and Dissemination of Weather Observations.*
*FAA Order JO 7210.3, Para 10−3−1, SIGMENT and PIREP Handling.*
*FAA Order JO 7900.5, Para 6.4d, Equipment for Sky Condition.*
*FAA Order 6750.16, Siting Criteria for Instrument Landing Systems.*

**1.** LOCALIZER CRITICAL AREA

**(a)** Do not authorize vehicle or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM when the official weather observation is a ceiling of less than 800 feet or visibility less than 2 miles, except:

**(1)** A preceding arriving aircraft on the same or another runway that passes over or through the area while landing or exiting the runway.

**(2)** A preceding departing aircraft or missed approach on the same or another runway that passes through or over the area.

**(b)** In addition to subparagraph a1(a), when the official weather observation indicates a ceiling of less than 200 feet or RVR 2,000 feet, do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the middle marker, or in the absence of a middle marker, 1/2 mile final.

**2.** GLIDESLOPE CRITICAL AREA. Do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway when the official weather observation indicates a ceiling of less than 800 feet or visibility less than 2 miles.

**b.** Operators commonly conduct “coupled” or “autoland” approaches to satisfy maintenance, training, or reliability program requirements. Promptly issue an advisory if the critical area will not be protected when an

arriving aircraft advises that a "coupled," "CATIII," "autoland," or similar type approach will be conducted and the official weather observation indicates a ceiling of 800 feet or more, or the visibility is 2 miles or more.

***PHRASEOLOGY–***
*ILS CRITICAL AREA NOT PROTECTED.*

**c.** The Department of Defense (DoD) is authorized to define criteria for protection of precision approach critical areas at military controlled airports. This protection is provided to all aircraft operating at that military controlled airport. Waiver authority for DoD precision approach critical area criteria rests with the appropriate military authority.

***NOTE–***
*Signs and markings are installed by the airport operator to define the ILS critical area. No point along the longitudinal axis of the aircraft is permitted past the hold line for holding purposes. The operator is responsible to properly position the aircraft, vehicle, or equipment at the appropriate hold line/sign or designated point. The requirements in paragraph 3–1–12, Visually Scanning Runways, remain valid as appropriate.*

***REFERENCE–***
*AC150/5340–1, Standards for Airport Markings.*

## 3–7–6. PRECISION OBSTACLE FREE ZONE (POFZ) AND FINAL APPROACH OBSTACLE CLEARANCE SURFACES (OCS)

**a.** Ensure the POFZ is clear of traffic (aircraft or vehicles) when an aircraft on a vertically–guided final approach is within 2 miles of the runway threshold and the official weather observation indicates the ceiling is below 300 feet or visibility is less than 3/4 SM to protect aircraft executing a missed approach.

***NOTE–***
*Only horizontal surfaces (e.g., the wings) can penetrate the POFZ, but not the vertical surfaces (e.g., fuselage or tail). Three hundred feet (300) is used because ATC does not measure ceilings in fifty (50) foot increments.*

**b.** Ensure the final approach OCS (e.g., ILS /LPV W, X, and Y surfaces) are clear of aircraft/vehicles when an aircraft on the vertically–guided approach is within 2 miles of the runway threshold and the official weather observation indicates the ceiling is below 800 feet or visibility is less than 2 SM to protect aircraft executing a missed approach.

***NOTE–***
**1.** *The POFZ and the close–in portion of the final approach obstacle clearance surfaces protect aircraft executing a missed approach.*

**2.** *Vehicles that are less than 10 feet in height, necessary for the maintenance of the airport and/or navigation facilities operating outside the movement area, are exempt.*

**c.** If it is not possible to clear the POFZ or OCS prior to an aircraft reaching a point 2 miles from the runway threshold and the weather is less than described in subparagraph a or b above, issue traffic to the landing aircraft.

***NOTE–***
*The POFZ and/or OCS must be cleared as soon as practical.*

***PHRASEOLOGY–***
*(ACID), IN THE EVENT OF MISSED APPROACH (issue traffic).*

*TAXIING AIRCRAFT/VEHICLE LEFT/RIGHT OF RUNWAY.*

***EXAMPLE–***
*"United 623, in the event of missed approach, taxiing aircraft right of runway."*

*"Delta 1058, in the event of missed approach, vehicle left of runway."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–6, Traffic Information.*
*AC 150/5300–13, Airport Design.*

***NOTE–***
*Aircraft conducting touch-and-go and stop-and-go operations are considered to be departing from an intersection.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–8–2, Touch–and–Go or Stop–and–Go or Low Approach.*

**b.** The time interval is not required when:

**1.** A pilot has initiated a request to deviate from the time intervals contained in subparagraph a1 or a2.

***NOTE–***
*A request for takeoff does not initiate a waiver request; the request for takeoff must be accomplished by a request to deviate from the time interval.*

**2.** USA NOT APPLICABLE. The intersection is 500 feet or less from the departure point of the preceding aircraft and both aircraft are taking off in the same direction.

**3.** Successive touch-and-go or stop-and-go operations are conducted with any aircraft following an aircraft in the pattern that requires wake turbulence separation, or an aircraft departing the same runway that requires wake turbulence separation in accordance with subparagraphs a1, a2, a3, or a4 (except for super aircraft), provided the pilot is maintaining visual separation/spacing behind the preceding aircraft. Issue a wake turbulence cautionary advisory and the position of the larger aircraft.

***NOTE–***
*Not authorized with a Super as the lead or departure aircraft.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–5–4, Minima, subpara g.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

**4.** If action is initiated to reduce the separation between successive touch-and-go or stop-and-go operations, apply the appropriate separation contained in subparagraph a1, a2, a3, or a4.

**c.** When applying the provision of subparagraph b:

**1.** Issue a wake turbulence advisory before clearing the aircraft for takeoff.

**2.** Do not clear the intersection departure for an immediate takeoff.

**3.** Issue a clearance to permit the trailing aircraft to deviate from course enough to avoid the flight path of the preceding aircraft when applying subparagraph b1 or b2.

**4.** Separation requirements in accordance with paragraph 3–9–6, Same Runway Separation, must also apply.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation.*

## 3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS

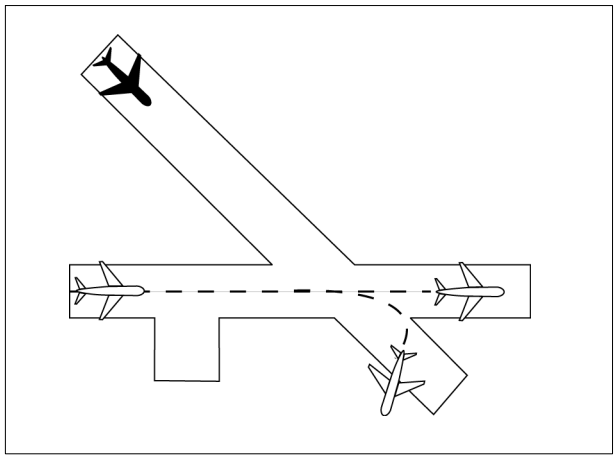
**a.** Issue traffic information to each aircraft operating on intersecting runways.

**b.** Separate departing aircraft from another aircraft using an intersecting runway by ensuring that the departure does not begin takeoff roll until one of the following exists:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

**1.** The preceding aircraft has departed and passed the intersection or is turning to avert any conflict. (See FIG 3–9–9).

*FIG 3–9–9*
**Intersecting Runway Separation**



**2.** A preceding arriving aircraft (See FIG 3–9–10).

**(a)** Is clear of the landing runway, or

**(b)** Has completed landing roll and acknowledged the instruction to hold short of the intersection, or

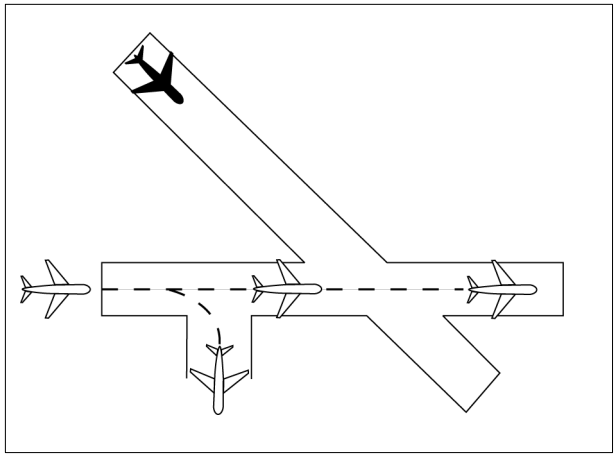
**(c)** Has completed landing roll and acknowledged the instruction to exit the runway prior to intersection, or

**(d)** Has completed landing roll and is observed turning at an exit point prior to the intersection, or

**(e)** Has passed the intersection.

***REFERENCE–***
*P/CG Term– Clear of the Runway.*
*P/CG Term – Landing Roll.*

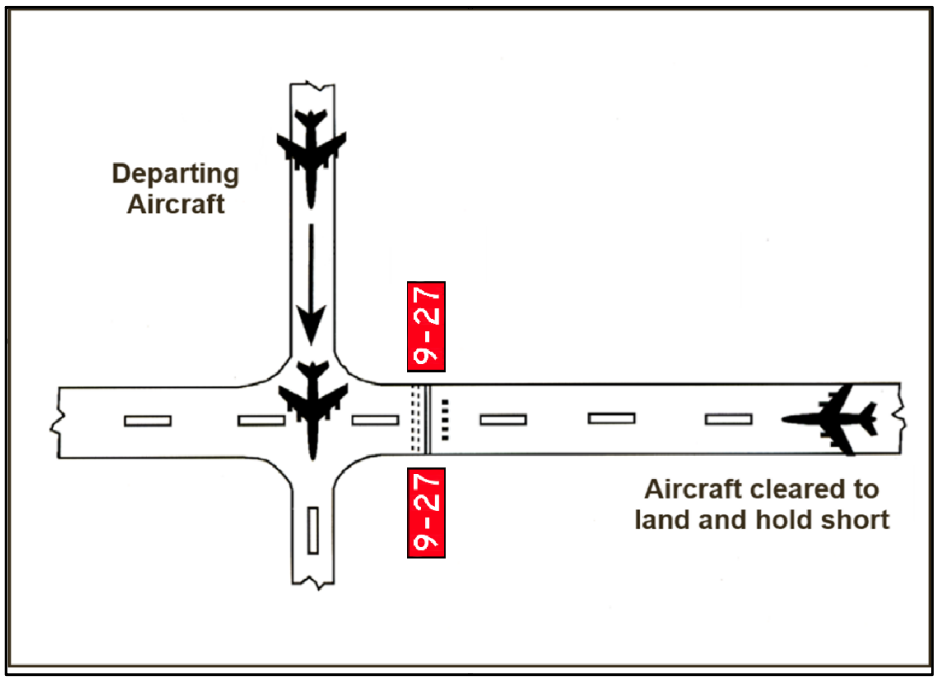
*FIG 3–9–10*
**Intersecting Runway Separation**



**3.** *USA/USAF/USN NOT APPLICABLE.* An arriving aircraft has acknowledged a clearance to land and hold short of the intersecting runway/intersecting flight path being used by a departing aircraft in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO). (See FIG 3–9–11.)

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting Flight Path Separation.*

*FIG 3–9–11*
**Intersecting Runway Separation**




**WAKE TURBULENCE APPLICATION**

**4.** Separate aircraft taking off behind a departing or landing aircraft on an intersecting runway if flight paths will cross (see FIG 3–9–12 and FIG 3–9–13):

***NOTE–***
*Takeoff clearance to the following aircraft should not be issued until the appropriate time interval has passed after the preceding aircraft began takeoff roll.*

**(a)** Heavy, large, or small behind super – *3 minutes.*

**(b)** Heavy, large, or small behind heavy – *2 minutes.*

**(c)** Small behind B757 – *2 minutes.*

*FIG 3–9–12*
**Departure Behind Departure on Intersecting Runway**

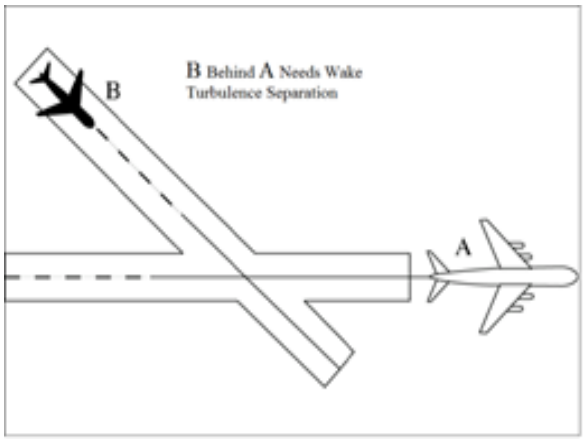
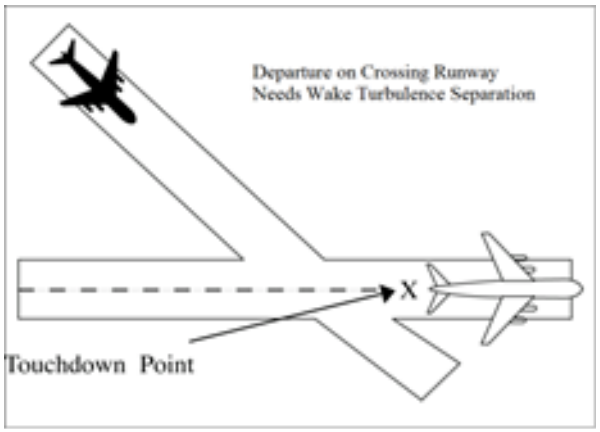


*FIG 3–9–13*
**Departure Behind Arrival on Intersecting Runway**




**5.** Pilot requests to deviate from the required time intervals must not be approved if the preceding aircraft requires wake turbulence separation.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.*

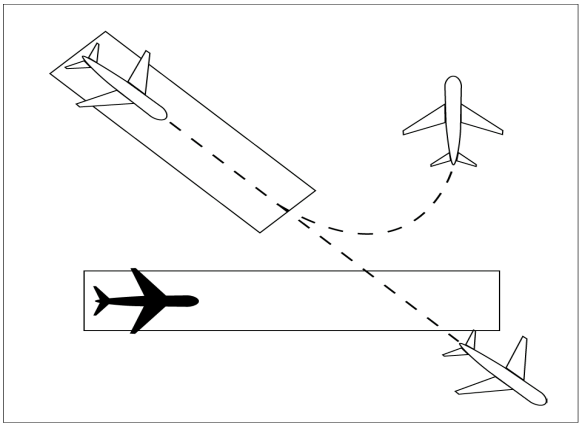
## 3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

**a.** Separate departing aircraft from an aircraft using a nonintersecting runway when the flight paths intersect by ensuring that the departure does not begin takeoff roll until one of the following exists:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

**1.** The preceding aircraft has departed and crossed the departure runway, or is turning to avert any conflict (see FIG 3–9–14).

*FIG 3–9–14*
**Intersecting Runway Separation**



**2.** A preceding arriving aircraft has completed the landing roll and will hold short of the projected intersection, passed the projected intersection, or has crossed over the departure runway (see FIG 3–9–15 and FIG 3–9–16).

*FIG 3–9–15*
**Intersecting Runway Separation**

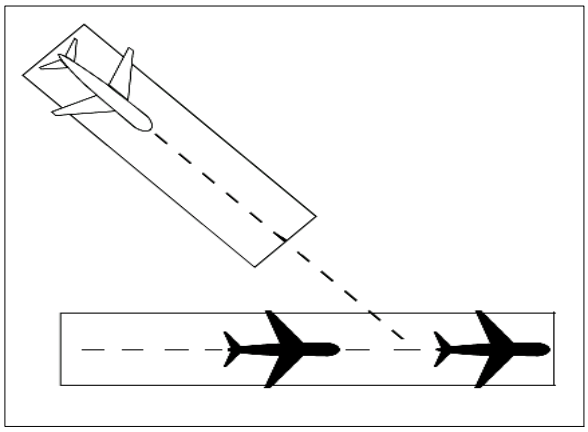
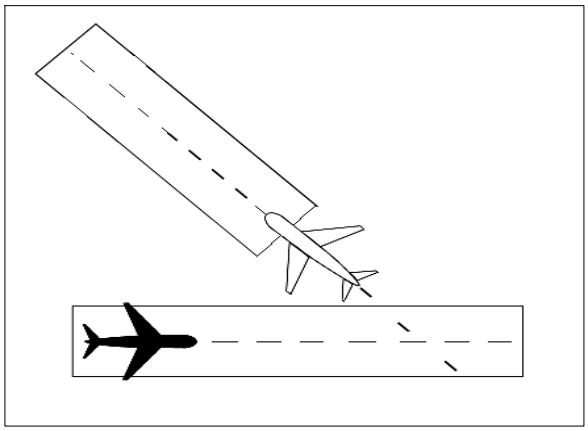


*FIG 3–9–16*
**Intersecting Runway Separation**



**b.** If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance of 1 NM or less from either departure end, apply the provisions of paragraph 3–9–8, Intersecting Runway/ Intersecting Flight Path Operations, unless the facility is using aids specified in a facility directive, (may include but are not limited to, Arrival/Departure Window (ADW), ASDE–X Virtual Runway Intersection Point (VRIP), cut–off points or automation). (See FIG 3–9–17 and FIG 3–9–18.)

***REFERENCE–***
*FAA Order JO 7210.3, Para 10-3-16, Go-Around/Missed Approach.*

*FIG 3–9–17*
**Intersecting Runway Separation**

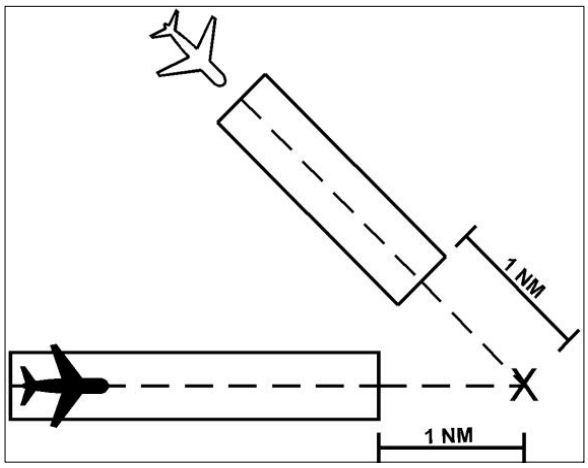
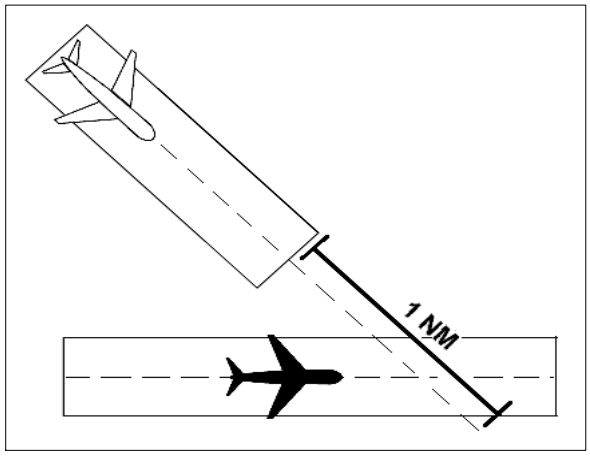



*FIG 3–9–18*
**Intersecting Runway Separation**




**WAKE TURBULENCE APPLICATION**

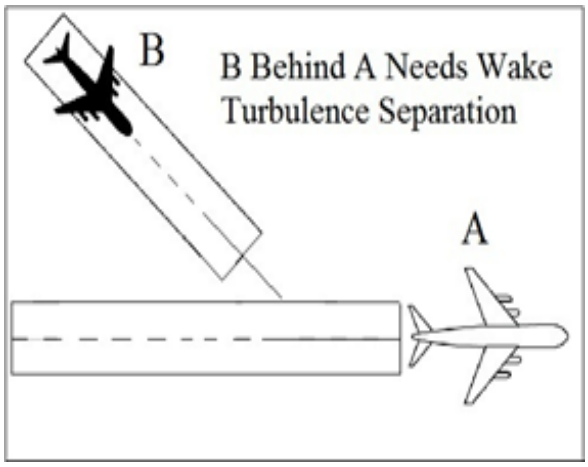
**c.** Separate aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–19):

**1.** Heavy, large, or small behind super – *3 minutes.*

**2.** Heavy, large, or small behind heavy – *2 minutes.*

**3.** Small behind B757 – *2 minutes.*

*FIG 3–9–19*
**Intersecting Runway Separation**




***NOTE–***
*Takeoff clearance to the following aircraft should not be issued until the time interval has passed from when the preceding aircraft began takeoff roll.*

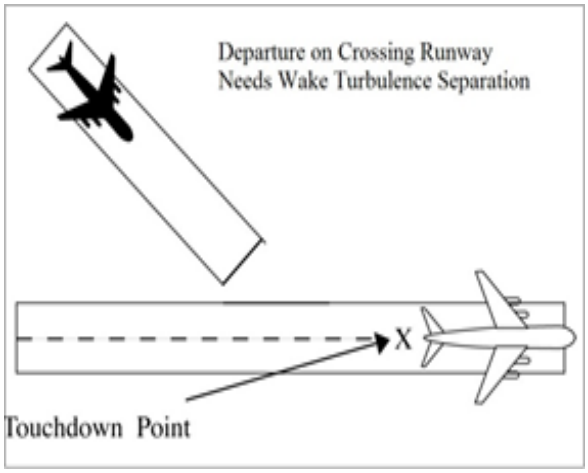
**d.** Separate aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3–9–20):

**1.** Heavy, large, or small behind super – *3 minutes.*

**2.** Heavy, large, or small behind heavy – *2 minutes.*

**3.** Small behind B757 – *2 minutes.*

*FIG 3–9–20*
**Intersecting Runway Separation**




**e.** Do not approve pilot requests to deviate from the required time interval if the preceding aircraft requires wake turbulence separation**.**

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*
*FAA Order JO 7110.65, Para 5–8–5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways.*
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.*

## 3–9–10. TAKEOFF CLEARANCE

**a.** When issuing a clearance for takeoff, first state the runway number followed by the takeoff clearance.

***PHRASEOLOGY–***
*RUNWAY (number), CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"RUNWAY TWO SEVEN, CLEARED FOR TAKEOFF."*

***NOTE–***
*Turbine–powered aircraft may be considered ready for takeoff when they reach the runway unless they advise otherwise.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–3–1, Departure Terminology.*

**b.** When clearing an aircraft for takeoff from an intersection, state the runway intersection.

***PHRASEOLOGY–***
*RUNWAY (number) AT (taxiway designator) CLEARED FOR TAKEOFF.*

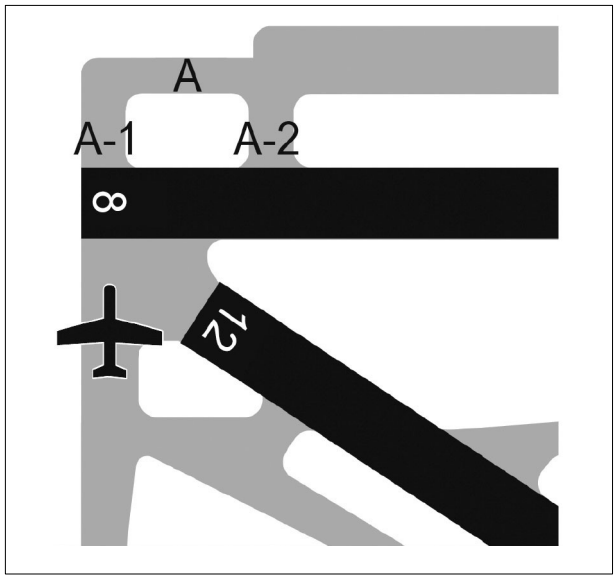
**c.** When two or more aircraft call the tower ready for departure, one or more at the full length of a runway and one or more at an intersection, state the location of the aircraft at the full length of the runway when clearing that aircraft for takeoff.

***PHRASEOLOGY–***
*RUNWAY (number), FULL LENGTH, CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"American Four Eighty Two, Runway Three Zero full length, cleared for takeoff."*

**d.** The controller must ensure that all runways along the taxi route that lead to the departure runway are crossed before the takeoff clearance is issued, except as stated in paragraph 3–9–10e.

***FIG 3–9–21***
**Runway/Taxiway Proximity**

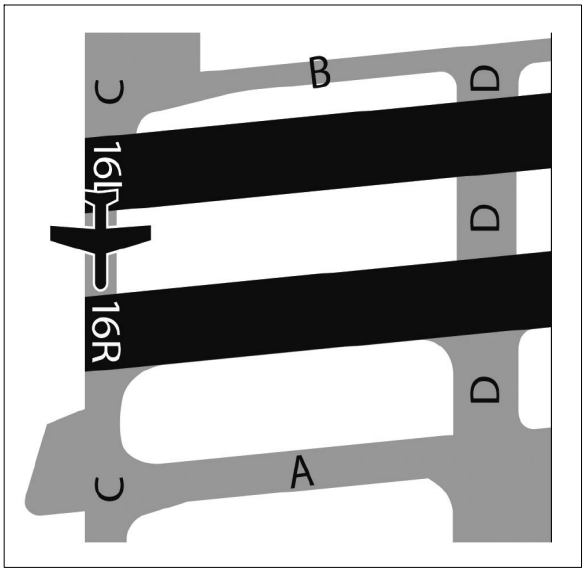



**e.** At those airports where the airport configuration does not allow for an aircraft to completely cross one runway and hold short of the departure runway and/or where airports do not have runway hold markings between runways, state the runway to be crossed with the takeoff clearance if the aircraft is not able to complete a runway crossing before reaching its departure runway.

***PHRASEOLOGY–***
*CROSS RUNWAY (number), RUNWAY (number) CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"CROSS RUNWAY TWO FOUR LEFT, RUNWAY TWO FOUR RIGHT, CLEARED FOR TAKEOFF."*

*FIG 3–9–22*
**Runway/Taxiway Proximity**




***REFERENCE–***
*FAA Order JO 7210.3, Para 10–3–10, Takeoff Clearance.*
*P/CG Term – Clear of the Runway.*

**f.** Do not use the term "full length" when the runway length available for departure has been temporarily shortened. On permanently shortened runways, do not use the term "full length" until the Chart Supplement is updated to include the change(s).

***NOTE–***
*The use of the term "full length" could be interpreted by the pilot(s) as the available runway length prior to the runway being shortened.*

**g.** Whenever a runway length has been temporarily or permanently shortened, state the word "shortened" immediately following the runway number as part of the takeoff clearance. This information must be issued in conjunction with the takeoff clearance.

**1.** The addition of "shortened" must be included in the takeoff clearance for the duration of the construction project when the runway is temporarily shortened.

**2.** The addition of "shortened" must be included in the takeoff clearance until the Chart Supplement is updated to include the change(s) when the runway is permanently shortened.

***PHRASEOLOGY–***
*RUNWAY (number) SHORTENED, CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"Runway Two-Seven shortened, cleared for takeoff."*

***PHRASEOLOGY–***
*RUNWAY (number) AT (taxiway designator) INTERSECTION DEPARTURE SHORTENED, CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"Runway Two-Seven at Juliett, intersection departure shortened, cleared for takeoff."*

***REFERENCE–***
*FAA Order JO 7210.3, Para 10-3-12, Airport Construction.*
*FAA Order JO 7210.3, Para 10-3-13, Change in Runway Length Due to Construction.*

**h.** *USAF.* When an aircraft is cleared for takeoff, inform it of the closest traffic within 6 miles on final approach to the same runway. If the approaching aircraft is on a different frequency, inform it of the departing aircraft.

**i.** *USA/USN/USAF.* Issue surface wind and takeoff clearance to aircraft.

***PHRASEOLOGY–***
*RUNWAY (number), WIND (surface wind in direction and velocity). CLEARED FOR TAKEOFF.*

## 3–9–11. CANCELLATION OF TAKEOFF CLEARANCE

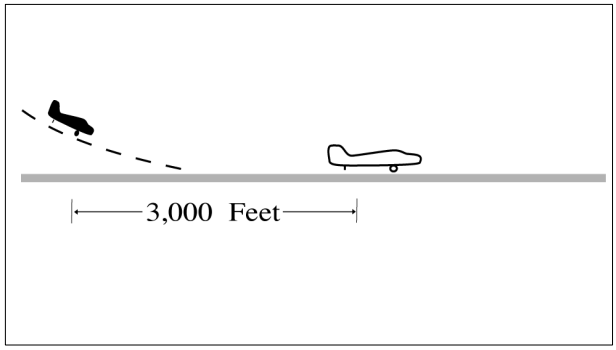
Cancel a previously issued clearance for takeoff and inform the pilot of the reason if circumstances require. Once an aircraft has started takeoff roll, cancel the takeoff clearance only for the purpose of safety.

***NOTE–***
*In no case should a takeoff clearance be canceled after an aircraft has started its takeoff roll solely for the purpose of meeting traffic management requirements/EDCT.*

***PHRASEOLOGY–***
*CANCEL TAKEOFF CLEARANCE (reason).*

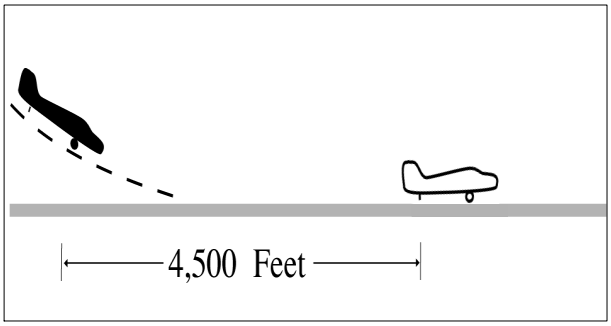
**(a)** When a Category I aircraft is landing behind a Category I or II– *3,000 feet*. (See FIG 3–10–2.)

*FIG 3–10–2*
**Same Runway Separation**




**(b)** When a Category II aircraft is landing behind a Category I or II– *4,500 feet.* (See FIG 3–10–3.)

*FIG 3–10–3*
**Same Runway Separation**




**2.** The other aircraft has departed and crossed the runway end. (See FIG 3–10–4). If you can determine distances by reference to suitable landmarks and the other aircraft is airborne, it need not have crossed the runway end if the following minimum distance from the landing threshold exists:

**(a)** Category I aircraft landing behind Category I or II– *3,000 feet*.

**(b)** Category II aircraft landing behind Category I or II– *4,500 feet.*

**(c)** When either is a category III aircraft– *6,000 feet*. (See FIG 3–10–5.)

*FIG 3–10–4*
**Same Runway Separation**

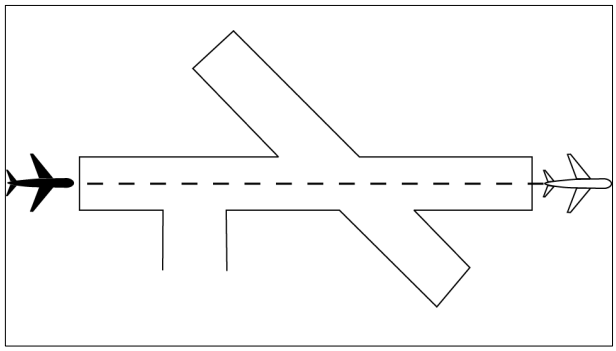
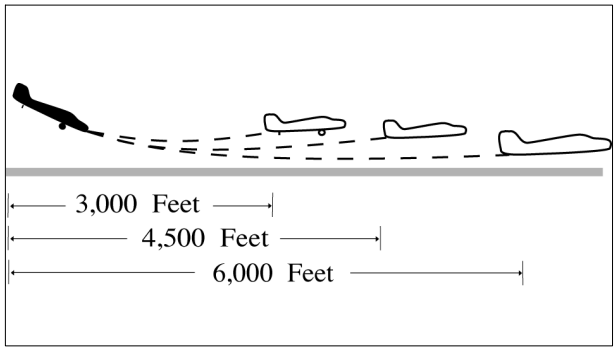


*FIG 3–10–5*
**Same Runway Separation**




**3.** When the succeeding aircraft is a helicopter, visual separation may be applied in lieu of using distance minima.

**WAKE TURBULENCE APPLICATION**

**b.** Issue wake turbulence advisories, and the position, altitude if known, and the direction of flight of:

**1.** The super or heavy to aircraft landing behind a departing/arriving super or heavy on the same or parallel runways separated by less than 2,500 feet.

**2.** The B757/large aircraft to a small aircraft landing behind a departing/arriving B757/large aircraft on the same or parallel runways separated by less than 2,500 feet.

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para 12, Pilot Responsibility.*
*FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.*

***EXAMPLE–***
**1.** **"***Runway two seven left cleared to land, caution wake turbulence, heavy Boeing 747 departing runway two seven right."*

**2.** *"Number two follow Boeing 757 on 2-mile final. Caution wake turbulence."*

**3.** *"Traffic, heavy Airbus 310 on 2-mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."*

## 3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS

Issue traffic information to each aircraft operating on intersecting runways.

**a.** Separate an arriving aircraft using one runway from another aircraft using an intersecting runway or a nonintersecting runway when the flight paths intersect by ensuring that the arriving aircraft does not cross the landing threshold or flight path of the other aircraft until one of the following conditions exists:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

***INTERPRETATION–***
*7110.65, 3–10–4, Intersecting Runway/Intersecting Flight Path Separation and 5–5–4, Minima (2021–06–09)*

**1.** The preceding aircraft has departed and passed the intersection/flight path or is airborne and turning to avert any conflict. (See FIG 3–10–6 and FIG 3–10–7.)

*FIG 3–10–6*
**Intersecting Runway Separation**

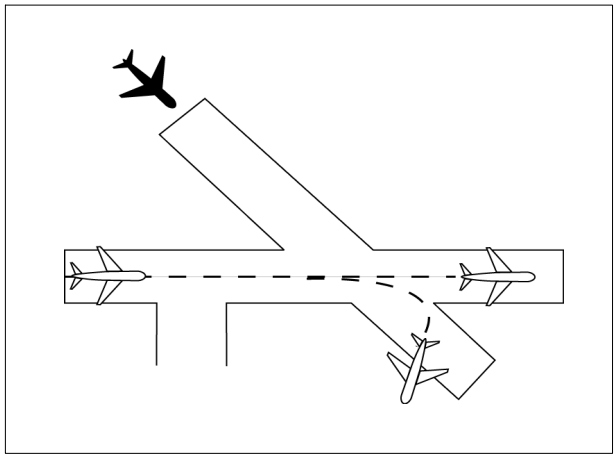
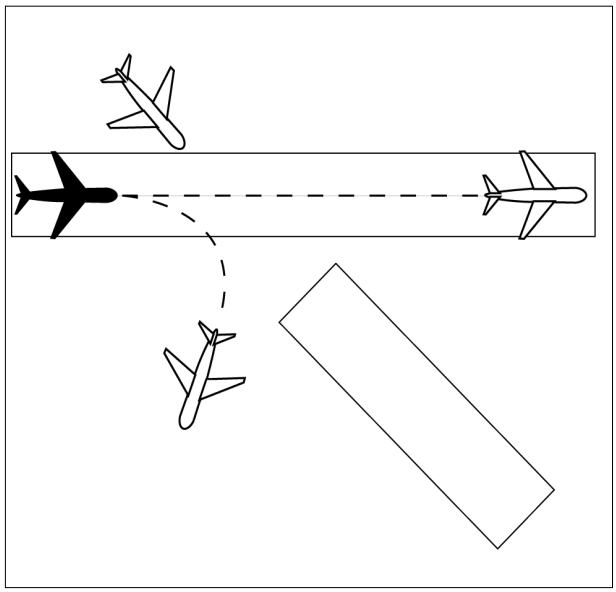


*FIG 3–10–7*
**Intersecting Runway Separation**



**2.** A preceding arriving aircraft is clear of the landing runway, completed landing roll and will hold short of the intersection/flight path, or has passed the intersection/flight path. (See FIG 3–10–8 and FIG 3–10–9.)

*FIG 3–10–8*
**Intersection Runway Separation**

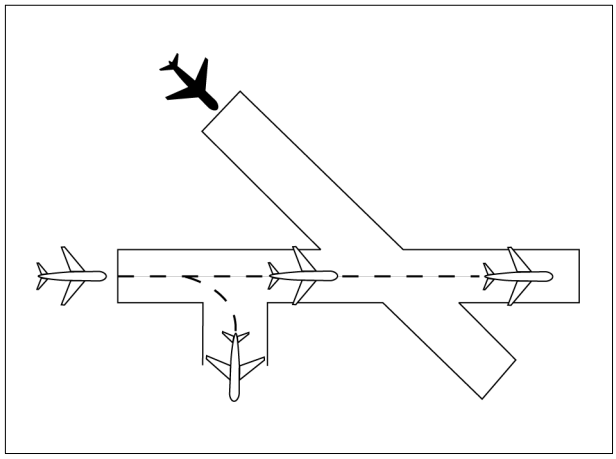
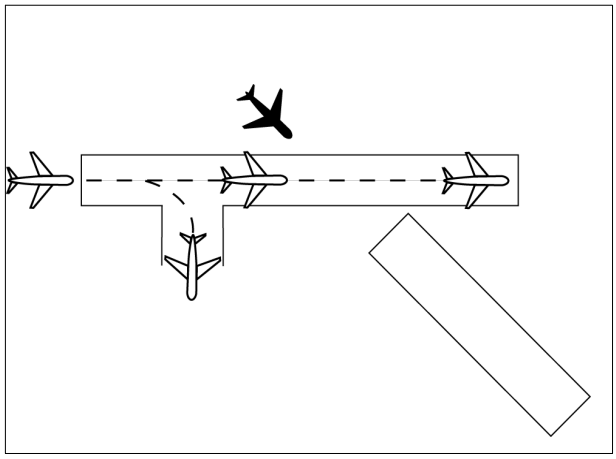


*FIG 3–10–9*
**Intersection Runway Separation**



***NOTE–***
*When visual separation is being applied by the tower, appropriate control instructions and traffic advisories must be issued to ensure go around or missed approaches avert any conflict with the flight path of traffic on the other runway.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation, Subpara a2.*

**b.** *USA/USAF/USN NOT APPLICABLE.* An arriving aircraft may be authorized to land and hold short of the intersecting runway/intersecting flight path being used by another departing or arriving aircraft in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO). The following procedures apply:

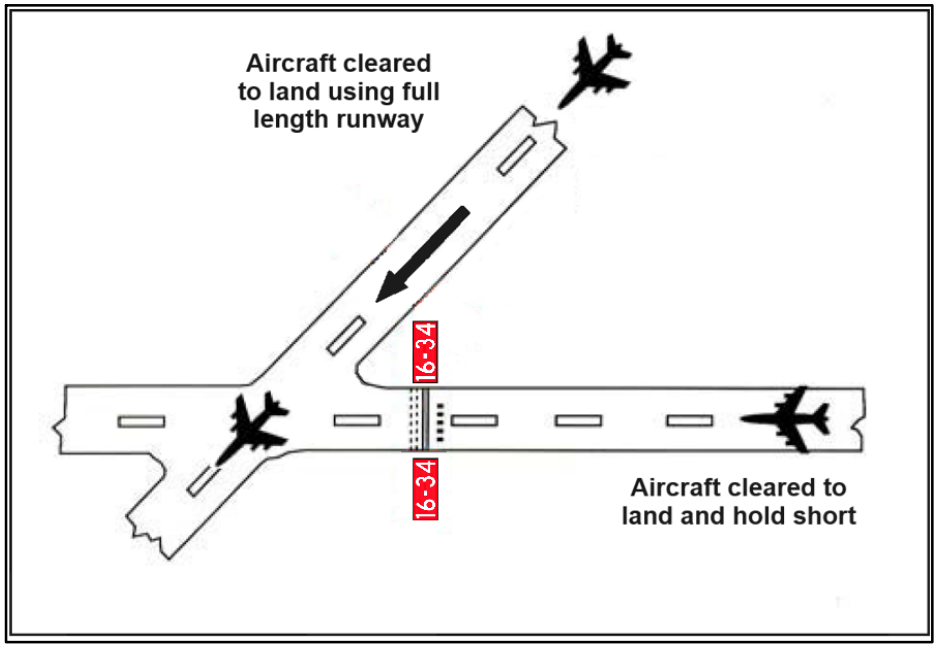
***NOTE–***
*Application of these procedures does not relieve controllers from the responsibility of providing other appropriate separation contained in this order.*

**1.** Instruct the arriving aircraft to land and hold short of the intersecting runway/intersecting flight path. In the case of simultaneous landings and no operational benefit is lost, restrict the aircraft of the lesser weight category (if known). (See FIG 3–10–10 and FIG 3–10–11.)

***NOTE–***
*The hold short point issued to an arriving aircraft may or may not be the intersecting runway or approach/departure flight path of the other runway. The hold short point may be a taxiway or other predetermined point on the runway that protects the intersecting runway/intersecting flight path.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–10–5, Landing Clearance.*

***FIG 3–10–10***
**Intersecting Runway Separation**




**2.** Issue traffic information to both aircraft involved and obtain an acknowledgment from each.

***EXAMPLE–***
**1.** *"Runway one eight cleared to land, hold short of runway one four left, traffic, (type aircraft) landing runway one four left."*

*"Runway one four left cleared to land, traffic, (type aircraft) landing runway one eight will hold short of the intersection."*

**2.** *"Runway three six cleared to land, hold short of runway three three, traffic, (type aircraft) departing runway three three."*

*"Traffic, (type aircraft) landing runway three six will hold short of the intersection, runway three three cleared for takeoff."*

**3.** The conditions in subparagraphs b1 and b2 above must be met in sufficient time to take other action, if desired by the pilot(s), and no later than the time landing clearance is issued.

**WAKE TURBULENCE APPLICATION**

**c.** Separate aircraft landing behind a departing aircraft on a crossing runway if the arrival will fly through the airborne path of the departure by the appropriate radar separation or the following interval: (See FIG 3–10–11):

**1.** Heavy, large, or small behind super – *3 minutes.*

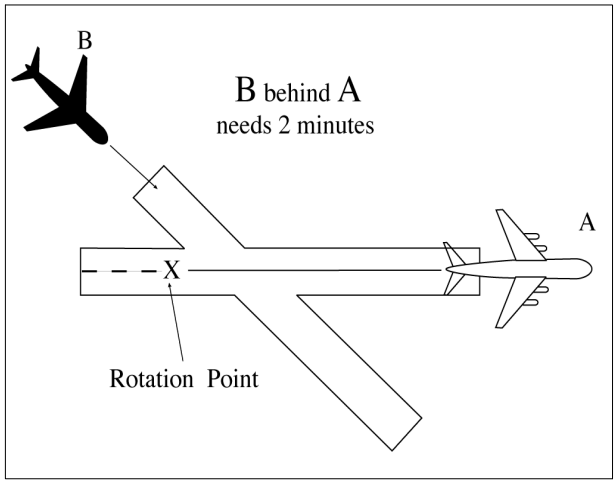
**2.** Heavy, large, or small behind heavy – *2 minutes.*

**3.** Small behind B757 – *2 minutes.*

**d.** Issue wake turbulence cautionary advisories, the position, altitude if known, and direction of flight of the super, heavy, or B757 to:

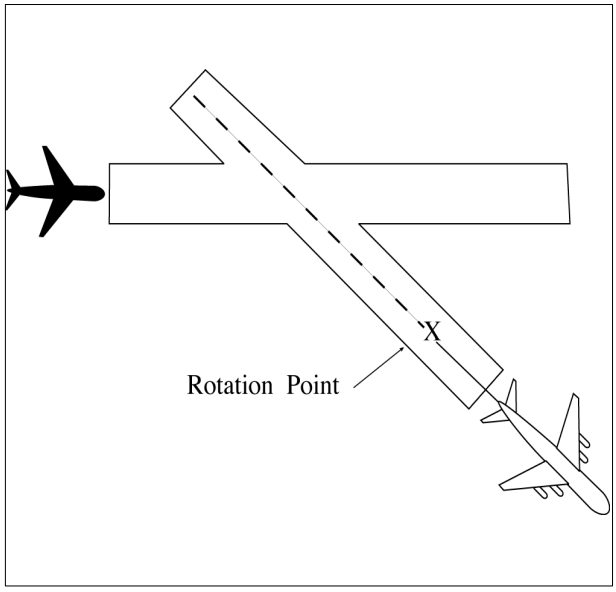
***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para 11, Pilot Responsibility.*

*FIG 3–10–11*
**Intersecting Runway Separation**




**1.** All aircraft landing on a crossing runway behind a departing super or heavy, or a small aircraft landing on a crossing runway behind a departing B757, if the arrival flight path will cross the takeoff path behind the departing aircraft rotation point. (See FIG 3–10–12.)

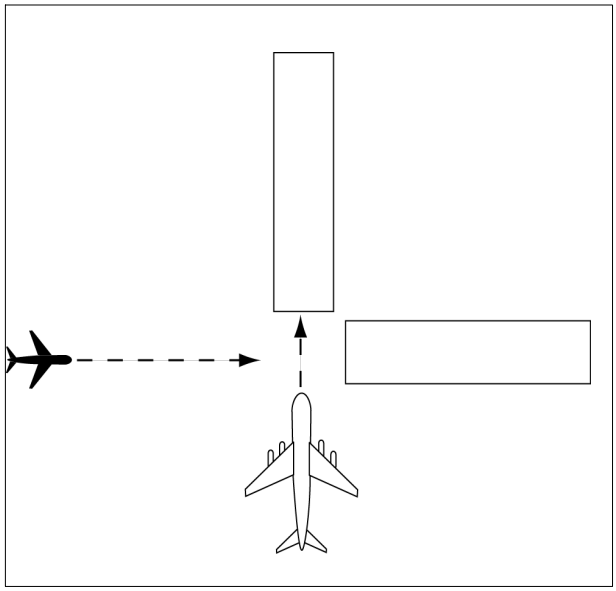
*FIG 3–10–12*
**Intersecting Runway Separation**




***EXAMPLE–***
*"Runway niner cleared to land. Caution wake turbulence, heavy C–One Forty One departing runway one five."*

**2.** All VFR aircraft landing on a crossing runway behind an arriving super or heavy, and VFR small aircraft landing on a crossing runway behind a B757, if the arrival flight paths will cross. (See FIG 3–10–13.)

*FIG 3–10–13*
**Intersecting Runway Separation**



***EXAMPLE–***
*"Runway niner cleared to land. Caution wake turbulence, Boeing Seven Fifty Seven landing runway three six."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.*

## 3–10–5. LANDING CLEARANCE

**a.** When issuing a clearance to land, first state the runway number followed by the landing clearance.

***PHRASEOLOGY–***
*RUNWAY (number) CLEARED TO LAND.*

**b.** *USA/USAF/USN NOT APPLICABLE.* When issuing a clearance to land and hold short in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), exchange traffic information as necessary. Request a read back of hold short instructions when not received.

***NOTE–***
**1.** *Pilots who prefer to use the full length of the runway or a runway different from that specified are expected to advise ATC prior to landing.*

**2.** *Pilots may not be able to accept a LAHSO clearance when their aircraft is less than 1,000 feet AGL.*

***PHRASEOLOGY–***
*RUNWAY (number) CLEARED TO LAND, HOLD SHORT OF RUNWAY (number)/TAXIWAY (taxiway)/(approach/departure path)/POINT (predetermined point), (traffic, type aircraft, or other information).*

*Or*

*READ BACK HOLD SHORT INSTRUCTIONS.*

***EXAMPLE–***
**1.** *"Runway 7 Left, cleared to land, hold short of taxiway Whiskey, traffic crossing downfield."*

*Or (if hold short instructions are not read back with the landing clearance)*

*"Read back hold short instructions."*

**2.** *"Runway one eight cleared to land, hold short of runway one four left, traffic, (type aircraft) landing runway one four left."*

**3.** *"Runway one six cleared to land, hold short of runway seven left, traffic, (type aircraft) departing runway seven left."*

**c.** If the landing runway is changed, preface the landing clearance with "change to runway" followed by the runway number. Restate the runway number followed by the landing clearance.

***PHRASEOLOGY–***
*CHANGE TO RUNWAY (number), RUNWAY (number) CLEARED TO LAND.*

***NOTE–***
*The purpose of the "change to runway" phraseology and restating the runway number is to emphasize to the pilot that they are being cleared to land on a runway other than what they were expecting.*

**d.** When you become aware that an aircraft is aligned with the wrong surface, inform the pilot and:

**1.** Issue control instructions/clearances, or

***EXAMPLE–***
*"United four twenty three, go-around, you appear to be aligned with the wrong runway."*

*"American sixty three, go-around, you appear to be aligned with a taxiway."*

*"Southwest two thirty nine, you appear to be aligned with Runway 27 Left (pertinent information), Runway 27 Left, cleared to land."*

**2.** If time permits, verify the pilot is aligned with the correct runway. Issue control instructions/clearances as necessary.

***EXAMPLE–***
*"Twin Cessna four one four lima bravo, verify you are aligned with Runway 27 Left."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–6–4, Safety Logic Alert Responses.*
*FAA Order JO 7110.65, Para 3–10–8, Withholding Landing Clearance.*

**e.** Procedures.

**1.** Facilities without a safety logic system or facilities with the safety logic system inoperative or in the limited configuration must not clear an aircraft for a full-stop, touch-and-go, stop-and-go, low approach, or option on the same runway with an aircraft holding in position or taxiing to LUAW until the aircraft in position has exited the runway or starts takeoff roll.

**2.** Facilities using safety logic in the full core alert runway configuration may clear an aircraft for a full-stop, touch-and-go, stop-and-go, low approach, or option on the same runway with an aircraft holding in position or taxiing to LUAW except when reported weather conditions are less than ceiling 800 feet or visibility less than 2 miles.

**f.** Inform the closest aircraft that is requesting a full-stop, touch-and-go, stop-and-go, low approach, or option when there is traffic authorized to LUAW on the same runway.

***EXAMPLE–***
*"Delta One, Runway One–Eight, continue, traffic holding in position."*

*"Delta One, Runway One–Eight, cleared to land. Traffic holding in position."*
*"Twin Cessna Four Four Golf, Runway One-Niner base approved, traffic holding in position."*
*"Baron Two Five Foxtrot, Runway One-Niner Right extend downwind, tower will call your base, traffic holding in position."*

**g.** USA/USN/USAF. Issue runway identifier along with surface wind when clearing an aircraft to land, touch and go, stop and go, low approach, or the option.

***PHRASEOLOGY–***
*RUNWAY (number), WIND (surface wind direction and velocity), CLEARED TO LAND.*

***NOTE–***
*A clearance to land means that appropriate separation on the landing runway will be ensured. A landing clearance does not relieve the pilot from compliance with any previously issued restriction.*

**h.** Whenever a runway length has been temporarily or permanently shortened, state the word "shortened" immediately following the runway number as part of the landing clearance. This information must be issued in conjunction with the landing clearance.

**1.** The addition of "shortened" must be included in the landing clearance for the duration of the construction project when the runway is temporarily shortened.

**2.** The addition of "shortened" must be included in the landing clearance until the Chart Supplement is updated to include the change(s) when the runway is permanently shortened.

***PHRASEOLOGY–***
*RUNWAY (number) SHORTENED, CLEARED TO LAND.*

***EXAMPLE–***
*"Runway Two-Seven shortened, cleared to land."*

**i.** If landing clearance is temporarily withheld, insert the word "shortened" immediately after the runway number to advise the pilot to continue.

***PHRASEOLOGY–***
*RUNWAY (number) SHORTENED, CONTINUE.*

***EXAMPLE–***
*"Runway Two-Seven shortened, continue."*

***REFERENCE–***
*FAA Order JO 7210.3, Para 10-3-12, Airport Construction.*
*FAA Order JO 7210.3, Para 10-3-13, Change in Runway Length Due to Construction.*

## 3–10–6. ANTICIPATING SEPARATION

**a.** Landing clearance to succeeding aircraft in a landing sequence need not be withheld if you observe the positions of the aircraft and determine that prescribed runway separation will exist when the aircraft crosses the landing threshold. Issue traffic information to the succeeding aircraft if a preceding arrival has not been previously reported and when traffic will be departing prior to their arrival.

***EXAMPLE–***
*"American Two Forty–Five, Runway One–Eight, cleared to land, number two following a United Seven–Thirty–Seven two mile final. Traffic will depart prior to your arrival."*

*"American Two Forty–Five, Runway One–Eight, cleared to land. Traffic will depart prior to your arrival."*

***NOTE–***
*Landing sequence number is optional at tower facilities where the arrival sequence to the runway is established by the approach control.*

**b.** Anticipating separation must not be applied when conducting LUAW operations, except as authorized in subparagraph 3–10–5e2. Issue applicable traffic information when using this provision.

***EXAMPLE–***
*"American Two Forty–Five, Runway One–Eight, cleared to land. Traffic will be a Boeing Seven–Fifty–Seven holding in position."*

***REFERENCE–***
*P/CG Term– Clear of the Runway.*

## 3–10–7. LANDING CLEARANCE WITHOUT VISUAL OBSERVATION

When an arriving aircraft reports at a position where he/she should be seen but has not been visually observed, advise the aircraft as a part of the landing clearance that it is not in sight and restate the landing runway.

***PHRASEOLOGY–***
*NOT IN SIGHT, RUNWAY (number) CLEARED TO LAND.*

***NOTE–***
*Aircraft observance on the CTRD satisfies the visually observed requirement.*

## 3–10–8. WITHHOLDING LANDING CLEARANCE

Do not withhold a landing clearance indefinitely even though it appears a violation of Title 14 of the Code of Federal Regulations has been committed. The apparent violation might be the result of an emergency situation. In any event, assist the pilot to the extent possible.

## 3–10–9. RUNWAY EXITING

**a.** Instruct aircraft where to turn-off the runway after landing, when appropriate, and advise the aircraft to hold short of a runway or taxiway if required for traffic.

***PHRASEOLOGY–***
*TURN LEFT/RIGHT (taxiway/runway),*

*or*

*IF ABLE, TURN LEFT/RIGHT (taxiway/runway)*

*and if required*

*HOLD SHORT OF (runway).*

***NOTE–***
*Runway exiting or taxi instructions should not normally be issued to an aircraft prior to, or immediately after, touchdown.*

**b.** Taxi instructions must be provided to the aircraft by the local controller when:

**1.** Compliance with ATC instructions will be required before the aircraft can change to ground control, or

**2.** The aircraft will be required to enter an active runway in order to taxi clear of the landing runway.

***EXAMPLE–***
*"U.S. Air Ten Forty Two, turn right next taxiway, cross runway two one, contact ground point seven."*

*"U.S. Air Ten Forty Two, turn right on Alfa/next taxiway, cross Bravo, hold short of Charlie, contact ground point seven."*

***NOTE–***
**1.** *An aircraft is expected to taxi clear of the runway unless otherwise directed by ATC. Pilots must not exit the landing runway on to an intersecting runway unless authorized by ATC. In the absence of ATC instructions, an aircraft should taxi clear of the landing runway by clearing the hold position marking associated with the landing runway even if that requires the aircraft to protrude into or enter another taxiway/ramp area. This does not authorize an aircraft to cross a subsequent taxiway or ramp after clearing the landing runway.*

***REFERENCE–***
*P/CG Term– Clear of the Runway.*

**2.** *The pilot is responsible for ascertaining when the aircraft is clear of the runway by clearing the runway holding position marking associated with the landing runway.*

**c.** Ground control and local control must protect a taxiway/runway/ramp intersection if an aircraft is required to enter that intersection to clear the landing runway.

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–1–7, Use of Active Runways.*

**d.** Request a read back of runway hold short instructions when not received from the pilot.

***EXAMPLE–***
*"American Four Ninety–two, turn left at Taxiway Charlie, hold short of Runway 27 Right."*

*or*

*"American Four Ninety–two, turn left at Charlie, hold short of Runway 27 Right."*

*"American Four Ninety Two, Roger."*

*"American Four Ninety−two, read back hold instructions."*

***NOTE−***
*Read back hold instructions phraseology may be initiated for any point on a movement area when the controller believes the read back is necessary.*

## 3−10−10. ALTITUDE RESTRICTED LOW APPROACH

A low approach with an altitude restriction of no less than 500 feet above the airport may be authorized except over an aircraft holding in position or a departing aircraft. Do not clear aircraft for restricted altitude low approaches over personnel unless airport authorities have advised these personnel that the approaches will be conducted. Advise the approaching aircraft of the location of applicable ground traffic, personnel, or equipment.

***NOTE−***
**1.** *The 500 feet restriction is a minimum. Higher altitudes should be used when warranted. For example, 1,000 feet is more appropriate for super or heavy aircraft operating over unprotected personnel or small aircraft on or near the runway.*

**2.** *This authorization includes altitude restricted low approaches over preceding landing or taxiing aircraft. Restricted low approaches are not authorized over aircraft holding in position or departing aircraft.*

***PHRASEOLOGY−***
*CLEARED LOW APPROACH AT OR ABOVE (altitude). TRAFFIC (description and location).*

***REFERENCE−***
*FAA Order JO 7110.65, Para 3−1−5, Vehicles/Equipment/Personnel on Runways.*
*FAA Order JO 7110.65, Para 3−1−6, Traffic Information.*
*FAA Order JO 7110.65, Para 3−2−1, Light Signals.*
*FAA Order JO 7110.65, Para 3−3−3, Timely Information.*
*FAA Order JO 7110.65, Para 3−9−4, Line Up and Wait (LUAW).*
*FAA Order JO 7110.65, Para 3−10−3, Same Runway Separation.*

## 3−10−11. CLOSED TRAFFIC

Approve/disapprove pilot requests to remain in closed traffic for successive operations subject to local traffic conditions.

***PHRASEOLOGY−***
*LEFT/RIGHT (if required) CLOSED TRAFFIC APPROVED. REPORT (position if required),*

*or*

*UNABLE CLOSED TRAFFIC, (additional information as required).*

***NOTE−***
*Segregated traffic patterns for helicopters to runways and other areas may be established by letter of agreement or other local operating procedures.*

***REFERENCE−***
*FAA Order JO 7110.65, Para 3−7−4, Runway Proximity.*
*FAA Order JO 7110.65, Para 3−9−4, Line Up and Wait (LUAW).*
*FAA Order JO 7110.65, Para 3−10−3, Same Runway Separation.*

## 3−10−12. OVERHEAD MANEUVER

Issue the following to arriving aircraft that will conduct an overhead maneuver:

**a.** Pattern altitude and direction of traffic. Omit either or both if standard or when you know the pilot is familiar with a nonstandard procedure.

***PHRASEOLOGY−***
*PATTERN ALTITUDE (altitude). RIGHT TURNS.*

**b.** Request for report on initial approach.

***PHRASEOLOGY–***
*REPORT INITIAL.*

**c.** "Break" information and request for pilot report. Specify the point of "break" only if nonstandard. Request the pilot to report "break" if required for traffic or other reasons.

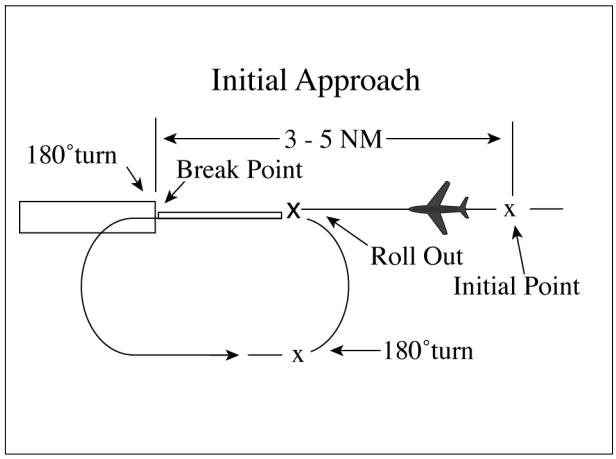
***PHRASEOLOGY–***
*BREAK AT (specified point).*

*REPORT BREAK.*

**d.** Overhead maneuver patterns are developed at airports where aircraft have an operational need to conduct the maneuver. An aircraft conducting an overhead maneuver is VFR and the IFR flight plan is canceled when the aircraft reaches the "initial point" on the initial approach portion of the maneuver. The existence of a standard overhead maneuver pattern does not eliminate the possible requirement for an aircraft to conform to conventional rectangular patterns if an overhead maneuver cannot be approved.

***NOTE–***
*Aircraft operating to an airport without a functioning control tower must initiate cancellation of the IFR flight plan prior to executing the overhead maneuver or after landing.*

***FIG 3–10–14***
**Overhead Maneuver**




***EXAMPLE–***
*"Air Force Three Six Eight, Runway Six, wind zero seven zero at eight, pattern altitude six thousand, report initial."*

*"Air Force Three Six Eight, break at midfield, report break."*

*"Air Force Three Six Eight, cleared to land."*

*"Alfa Kilo Two Two, Runway Three One, wind three three zero at one four, right turns, report initial."*

*"Alfa Kilo Two Two, report break."*

*"Alfa Kilo Two Two, cleared to land."*

**e.** Timely and positive controller action is required to prevent a conflict when an overhead pattern could extend into the path of a departing or a missed approach aircraft. Local procedures and/or coordination requirements should be set forth in an appropriate letter of agreement, facility directive, base flying manual etc., when the frequency of occurrence warrants.

## 3−10−13. SIMULATED FLAMEOUT (SFO) APPROACHES/EMERGENCY LANDING PATTERN (ELP) OPERATIONS/PRACTICE PRECAUTIONARY APPROACHES

**a.** Authorize military aircraft to make SFO/ELP/practice precautionary approaches if the following conditions are met:

**1.** A letter of agreement or local operating procedure is in effect between the military flying organization and affected ATC facility.

**(a)** Include specific coordination, execution, and approval procedures for the operation.

**(b)** The exchange or issuance of traffic information as agreed to in any interfacility letter of agreement is accomplished.

**(c)** Include a statement in the procedure that clarifies at which points SFOs/ELPs may/may not be terminated. (See FIG 3−10−15 and FIG 3−10−17.)

**2.** Traffic information regarding aircraft in radio communication with or visible to tower controllers which are operating within or adjacent to the flameout maneuvering area is provided to the SFO/ELP aircraft and other concerned aircraft.

**3.** The high-key altitude or practice precautionary approach maneuvering altitudes of the aircraft concerned are obtained prior to approving the approach. (See FIG 3−10−15 and FIG 3−10−17.)

***NOTE−***
**1.** *Practice precautionary/SFO/ELP approaches are authorized only for specific aircraft. Any aircraft, however, might make precautionary approaches, when engine failure is considered possible. The practice precautionary approach maneuvering area/altitudes may not conform to the standard SFO/ELP maneuvering area/altitudes.*

**2.** *SFO/ELP approaches generally require high descent rates. Visibility ahead and beneath the aircraft is greatly restricted.*

**3.** *Pattern adjustments for aircraft conducting SFOs and ELPs may impact the effectiveness of SFO and ELP training.*

***REFERENCE−***
*FAA Order JO 7110.65, Para 4−8−12, Low Approach and Touch-and-Go.*
*FAA Order JO 7610.14, Para 7−1−6, Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations.*

**b.** For overhead SFO/ELP approaches:

**1.** Request a report at the entry point.

***PHRASEOLOGY−***
*REPORT (high or low) KEY (as appropriate).*

**2.** Request a report at low key.

***PHRASEOLOGY−***
*REPORT LOW KEY.*

**3.** At low key, issue low approach clearance or alternate instructions.

***REFERENCE−***
*FAA Order JO 7110.65, Para 3−8−1, Sequence/Spacing Application.*
*FAA Order JO 7110.65, Para 10−1−7, Inflight Emergencies Involving Military Fighter-type Aircraft.*
*FAA Order JO 7610.14, Para 7−1−6, Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations.*

**c.** For straight−in simulation flameout approaches:

**1.** Request a position report from aircraft conducting straight−in SFO approaches.

***PHRASEOLOGY−***
*REPORT (distance) MILE SIMULATED FLAMEOUT FINAL.*

**2.** At the appropriate position on final (normally no closer than 3 miles), issue low approach clearance or alternate instruction. (See FIG 3−10−16.)

*FIG 3–10–15*
**Simulated Flameout [1]**

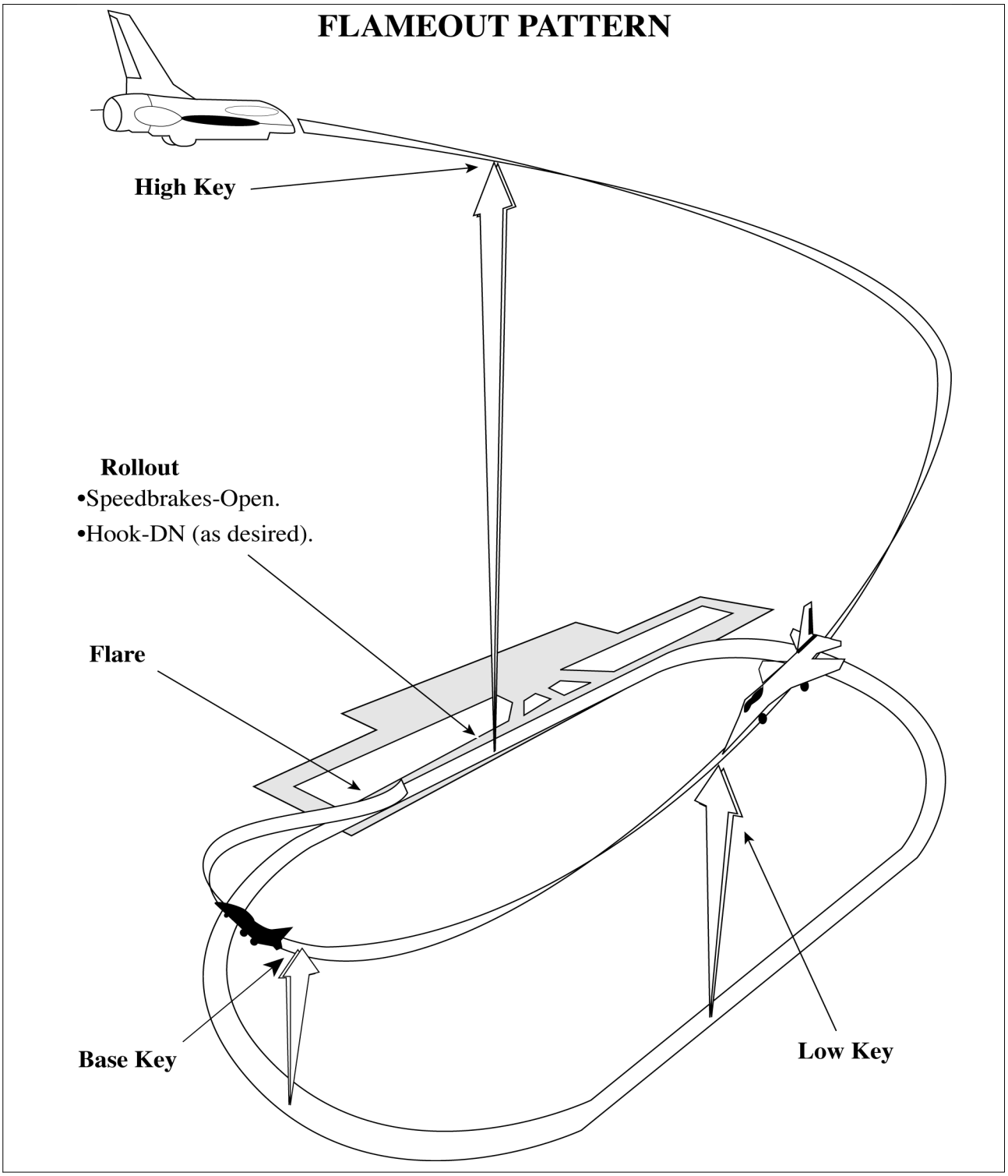


*FIG 3–10–16*
**Simulated Flameout [2]**

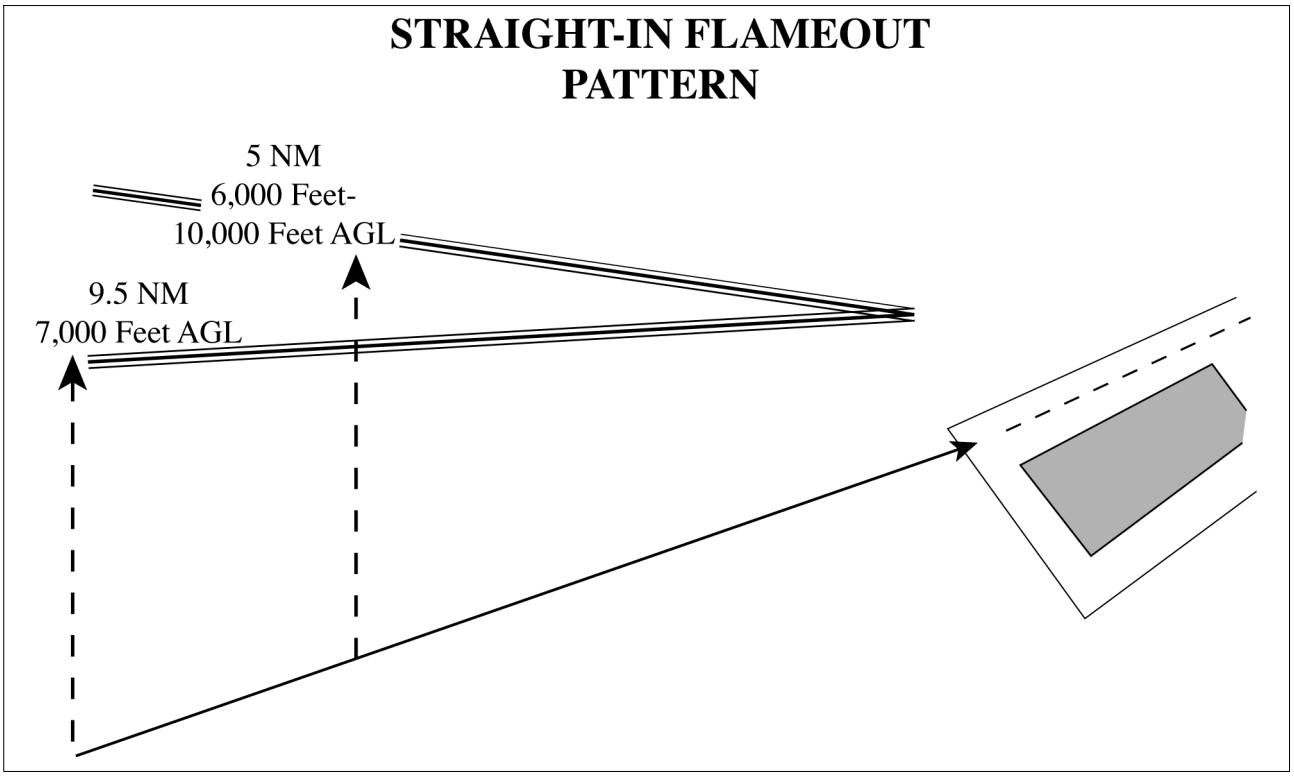
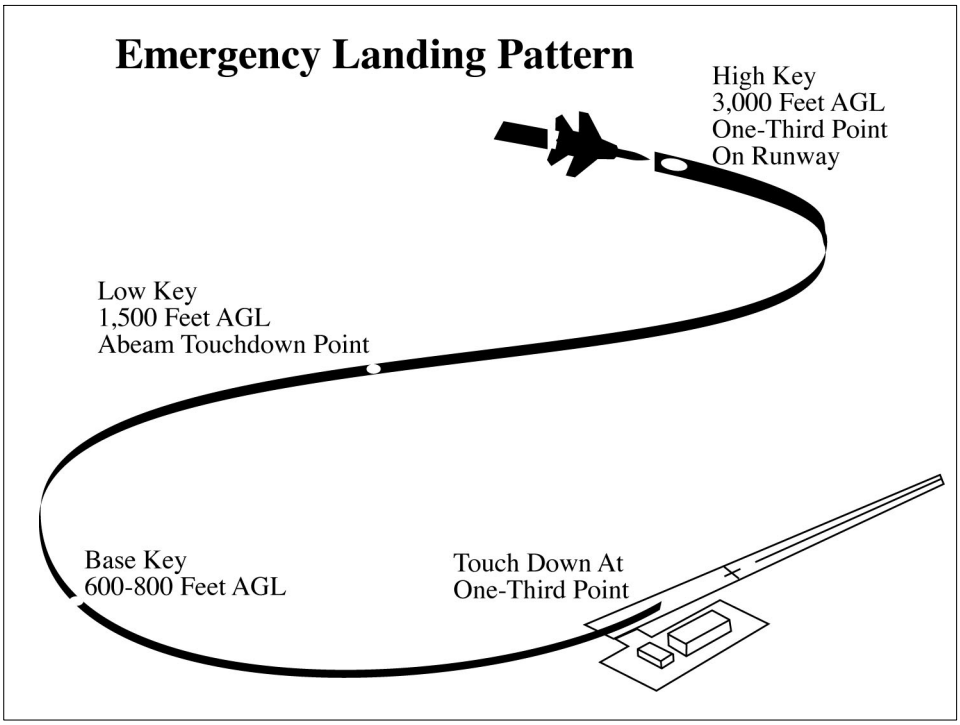



*FIG 3–10–17*
**Emergency Landing Pattern**



# Section 8. Approach Clearance Procedures

## 4–8–1. APPROACH CLEARANCE

**a.** Clear aircraft for "standard" or "special" instrument approach procedures only.

**1.** To authorize a pilot to execute a particular instrument approach procedure:

**(a)** Specify the name of the approach as published on the approach chart.

**(b)** Where more than one procedure is published on a single chart and a specific procedure is to be flown, specify the approach to be flown.

**(c)** If only one instrument approach of a particular type is published, the approach need not be identified by the runway reference.

**2.** An aircraft conducting an ILS or LDA approach must be advised at the time an approach clearance is issued when the glideslope is reported out of service, unless the title of the published approach procedure allows (for example, ILS or LOC Rwy 05).

**3.** Instrument approach procedures (IAPs) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF.

**4.** Where a STAR/ATS route and an IAP connect at an IAF or IF, and the connection will be used, clear the aircraft for approach at least 3 NM prior to the IAF/IF and specify the name of the connection fix. For arrivals via an ATS Route, assign an altitude to maintain until the connection fix.

***NOTE–***
*STARs are not ATS routes.*

***REFERENCE–***
*P/CG Term – Air Traffic Service (ATS) Routes.*

***EXAMPLE–***
*"At RDFSH, Cleared ILS Runway 27 Approach."*
*"At TNTOE, Cleared RNAV Z Runway 3 Approach."*
*"Cross AMONT at or above 9,000, Cleared ILS Runway 30R Approach."*

**5.** Where adequate radar coverage exists, radar facilities may vector aircraft to the final approach course in accordance with paragraph 5–9–1, Vectors to Final Approach Course, and paragraph 5–9–2, Final Approach Course Interception.

**6.** Where adequate radar coverage exists, radar facilities may clear an aircraft to any fix 3 NM or more prior to the FAF, along the final approach course, at an intercept angle not greater than 30 degrees.

**7.** Controllers must not disapprove a pilot request to cold temperature compensate in conjunction with the issuance of an approach clearance.

***PHRASEOLOGY–***
*CLEARED (type) APPROACH.*

*CLEARED APPROACH.*

*(To authorize a pilot to execute his/her choice of instrument approach),*

*CLEARED (specific procedure to be flown) APPROACH.*

*(Where more than one procedure is published on a single chart and a specific procedure is to be flown),*

At *(fix), CLEARED (specific procedure to be flown) APPROACH.*

(*To issue an approach clearance when a STAR/ATS route and IAP are directly connected),*

*CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.*

*(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)*

*CLEARED LOCALIZER APPROACH*

*(When the title of the approach procedure contains "or LOC")*

*CANCEL APPROACH CLEARANCE (additional instructions as necessary)*

*(When it is necessary to cancel a previously issued approach clearance)*

***EXAMPLE–***
*"Cleared Approach."*
*"Cleared (V–O–R/I–L–S/Localizer) Approach."*
*"Cleared L–D–A Runway Three-Six Approach."*
*"Cleared Localizer Back Course Runway One-Three Approach."*
*"Cleared RNAV Z Runway Two-Two Approach."*
*"Cleared BRANCH ONE Arrival and (ILS/RNAV) Runway One-Three Approach."*
*"Cleared I–L–S Runway Three-Six Approach, glideslope unusable."*
*"Cleared G–L–S Approach."*

***NOTE–***
**1.** *Clearances authorizing instrument approaches are issued on the basis that, if visual contact with the ground is made before the approach is completed, the entire approach procedure will be followed unless the pilot receives approval for a contact approach, is cleared for a visual approach, or cancels their IFR flight plan.*

**2.** *Approach clearances are issued based on known traffic. The receipt of an approach clearance does not relieve the pilot of his/her responsibility to comply with applicable Parts of Title 14 of the Code of Federal Regulations and the notations on instrument approach charts which levy on the pilot the responsibility to comply with or act on an instruction; for example, "Straight-in minima not authorized at night," "Procedure not authorized when glideslope/glidepath not used," "Use of procedure limited to aircraft authorized to use airport," or "Procedure not authorized at night" or Snowflake icon with associated temperature.*

**3.** *In some cases, the name of the approach, as published, is used to identify the approach, even though a component of the approach aid, other than the localizer on an ILS is inoperative.*

**4.** *Where more than one procedure to the same runway is published on a single chart, each must adhere to all final approach guidance contained on that chart, even though each procedure will be treated as a separate entity when authorized by ATC.*

**5.** *The use of alphabetical identifiers in the approach name with a letter from the end of the alphabet; for example, X, Y, Z, such as "HI TACAN Z Rwy 6L or RNAV(GPS) Y Rwy 04", denotes multiple straight-in approaches to the same runway that use the same approach aid.*

**6.** *Alphabetical suffixes with a letter from the beginning of the alphabet; for example, A, B, C, denote a procedure that does not meet the criteria for straight-in landing minimums authorization.*

**7.** *14 CFR section 91.175(j) requires a pilot to receive a clearance to conduct a procedure turn when vectored to a final approach course or fix, conducting a timed approach, or when the procedure specifies "NO PT."*

**8.** *An aircraft which has been cleared to a holding fix and prior to reaching that fix is issued a clearance for an approach, but not issued a revised routing; that is, "proceed direct to...." may be expected to proceed via the last assigned route, a feeder route (if one is published on the approach chart), and then to commence the approach as published. If, by following the route of flight to the holding fix, the aircraft would overfly an IAF or the fix associated\ with the beginning of a feeder route to be used, the aircraft is expected to commence the approach using the published feeder route to the IAF or from the IAF as appropriate; that is, the aircraft would not be expected to overfly and return to the IAF or feeder route.*

**9.** *Approach name items contained within parenthesis; for example, RNAV (GPS) Rwy 04, are not included in approach clearance phraseology.*

**10.** *Pilots are required to advise ATC when intending to apply cold temperature compensation to instrument approach segments. Pilots must advise ATC of the amount of compensation required for each affected segment on initial contact or as soon as possible. Pilots are not required to advise ATC when correcting on the final segment only. Controllers may delay the issuance of an approach clearance to comply with approved separation requirements when informed that a pilot will apply cold temperature compensation (CTC). Pilots will not apply altitude compensation, unless authorized, when assigned an altitude prior to an approach clearance. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible. This eliminates pilots having to climb once on the approach.*

***REFERENCE–***
*FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).*
*P/CG Term – Cold Temperature Compensation.*
*AIM, Para 5-1-17, Cold Temperature Operations.*
*AIM, Para 5-5-4, Instrument Approach.*

**11.** *There are some systems, for example, Enhanced Flight Vision System (EFVS), which allow pilots to conduct Instrument Approach Procedures (IAP) when the reported weather is below minimums prescribed on the IAP to be flown.*

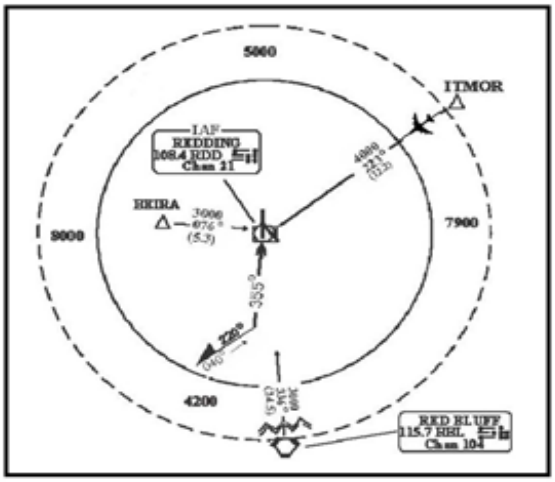
***REFERENCE–***
*14 CFR § 91.175(l).*
*P/CG Term – EFVS.*

**b.** For aircraft operating on unpublished routes, issue the approach clearance only after the aircraft is:

**1.** Established on a segment of a published route or instrument approach procedure, or (See FIG 4–8–1)

***EXAMPLE–***
*The aircraft is established on a segment of a published route at 5,000 feet. "Cleared V-O-R Runway Three Four Approach."*

***FIG 4–8–1***
**Approach Clearance Example**

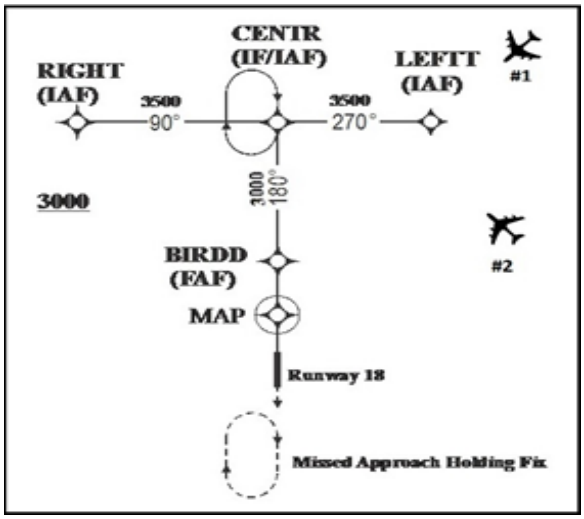



**2.** Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure. (See FIG 4-8-2.)

***EXAMPLE–***
*Aircraft 1 is cleared direct LEFTT. The MVA in the area is 3,000 feet, and the aircraft is at 4,000 feet. "Cross LEFTT at or above three thousand five hundred, cleared RNAV Runway One Eight Approach."*

*The MVA in the area is 3,000 feet and Aircraft 2 is at 3,000 feet. "Cleared direct LEFTT direct CENTR, maintain three thousand until CENTR, cleared straight-in RNAV Runway One Eight Approach."*

*FIG 4–8–2*
**Approach Clearance Example**




***NOTE–***
**1.** *The altitude assigned must assure IFR obstruction clearance from the point at which the approach clearance is issued until established on a segment of a published route or instrument approach procedure.*

**2.** *If the altitude assignment is VFR-on-top, it is conceivable that the pilot may elect to remain high until arrival over the final approach fix which may require the pilot to circle to descend so as to cross the final approach fix at an altitude that would permit landing.*

**3.** *An aircraft is not established on an approach until at or above an altitude published on that segment of the approach.*

***REFERENCE–***
*FAA Order 8260.3 United States Standard for Terminal Instrument Procedures (TERPS), Para 11-3.*

**c.** Except for visual approaches, do not clear an aircraft direct to the FAF unless it is also an IAF, wherein the aircraft is expected to execute the depicted procedure turn or hold-in-lieu of procedure turn.

**d.** Intercept angles greater than 90 degrees may be used when a procedure turn, a hold-in-lieu of procedure turn pattern, or arrival holding is depicted and the pilot will execute the procedure.

**e.** If a procedure turn, hold-in-lieu of procedure turn, or arrival holding pattern is depicted and the angle of intercept is 90 degrees or less, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a procedure turn or hold-in-lieu of procedure turn. (See FIG 4–8–3.)

***PHRASEOLOGY–***
*CLEARED STRAIGHT-IN (type) APPROACH*

***NOTE–***
**1.** *Restate "cleared straight-in" in the approach clearance even if the pilot was advised earlier to expect a straight-in approach.*

**2.** *Some approach charts have an arrival holding pattern depicted at the IAF using a "thin line" holding symbol. It is charted where holding is frequently required prior to starting the approach procedure so that detailed holding instructions are not required. The arrival holding pattern is not authorized unless assigned by ATC.*

***EXAMPLE–***
*"Cleared direct SECND, maintain at or above three thousand until SECND, cleared straight-in ILS Runway One-Eight approach."*

***REFERENCE–***
*AIM, Para 5-4-5, Instrument Approach Procedure Charts.*
*AIM, Para 5-4-9, Procedure Turn and Hold-in-lieu of Procedure Turn.*

*91.177) along the flight path to the IAF is 3,000 feet. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared RNAV Runway One-Eight approach." The pilot is expected to proceed direct CENTR and execute the hold-in-lieu of procedure turn.*

*Aircraft 2 can be cleared direct LEFTT. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR section 91.177) along the flight path to the IAF is 3,000 feet. "Cleared direct LEFTT, maintain at or above three thousand until LEFTT, cleared RNAV Runway One-Eight Approach." The pilot does not have to be cleared for a straight-in approach since no hold-in-lieu of procedure turn pattern is depicted at LEFTT.*

***REFERENCE–***
*FAA Order JO 7110.65, Chapter 5, Section 9, Radar Arrivals.*

**i.** Clear RNAV–equipped aircraft conducting RNAV instrument approach procedures that contain radius to fix (RF) legs:

**1.** Via published transitions, or

**2.** In accordance with subparagraph h.

**3.** Do not clear aircraft direct to any waypoint beginning or within an RF leg.

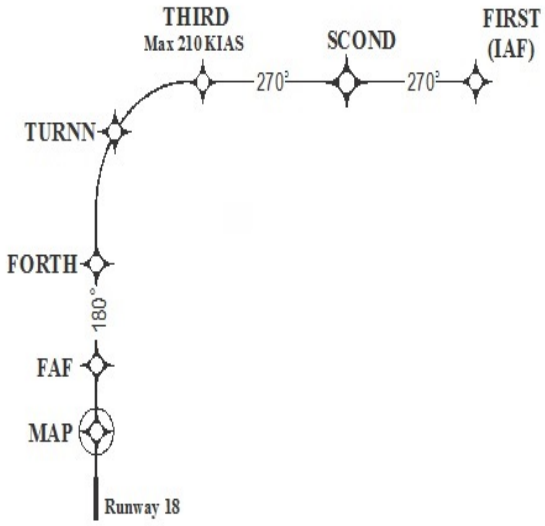
**4.** Do not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

***NOTE–***
**1.** *RNAV approaches (containing RF legs) that commence at 10,000 feet or above require special procedures that will be site specific and specified in a facility directive.*

**2.** *An RF leg is defined as a curved segment indicating a constant radius circular path about a defined turn center that begins at a waypoint. RF legs may have maximum airspeeds charted for procedural containment that must be followed.*

**3.** *If an aircraft is vectored off the procedure, expect the aircraft to request a return to an IAF.*

***FIG 4–8–5***
**Radius to Fix (RF) and Track to Fix (TF)**




***NOTE–***
**1.** *The segment between THIRD and FORTH in FIG 4–8–5 is an RF leg.*

**2.** *The straight segments between waypoints in FIG 4–8–5 are TF legs.*

**j.** Where a terminal arrival area (TAA) has been established to support instrument approaches, use the procedures under subparagraph b above. (See FIG 4–8–6 and FIG 4–8–7.)

***NOTE–***

**1.** *Aircraft that are within the lateral boundary of a TAA, and at or above the TAA minimum altitude, are established on the approach and may be issued an approach clearance without an altitude restriction.*

**2.** *The TAA minimum altitude may be higher than the MVA/MIA. If an aircraft is below the TAA minimum altitude, it must either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.*

***EXAMPLE–***

*Aircraft 1: The aircraft is at or above the minimum TAA altitude and within the lateral boundary of the TAA. "Cleared R–NAV Runway One Eight Approach."*

*Aircraft 2: The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. "Cross RIGHT at or above three thousand, cleared R–NAV Runway One Eight Approach."*

*Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One-Eight Approach."*

***FIG 4–8–6***

**Basic "T" and TAA Design**

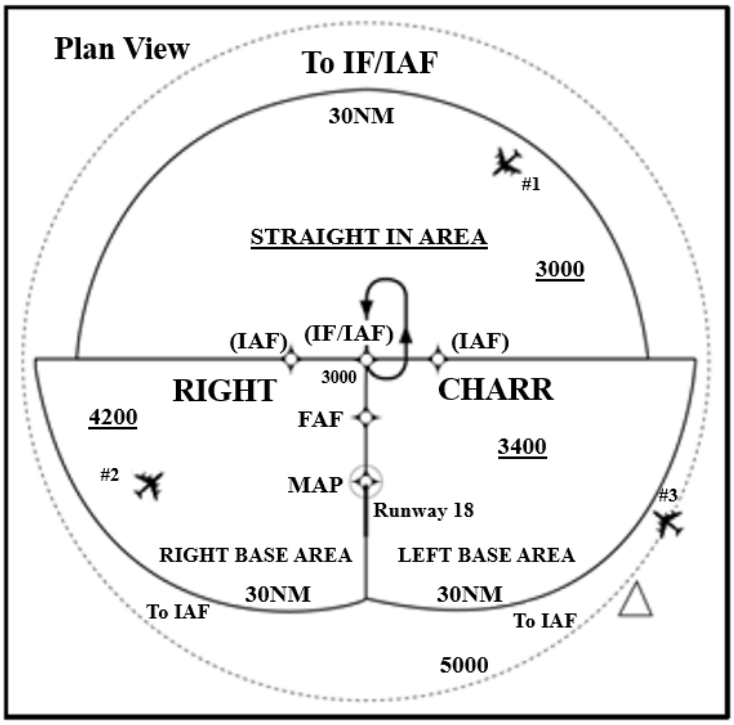
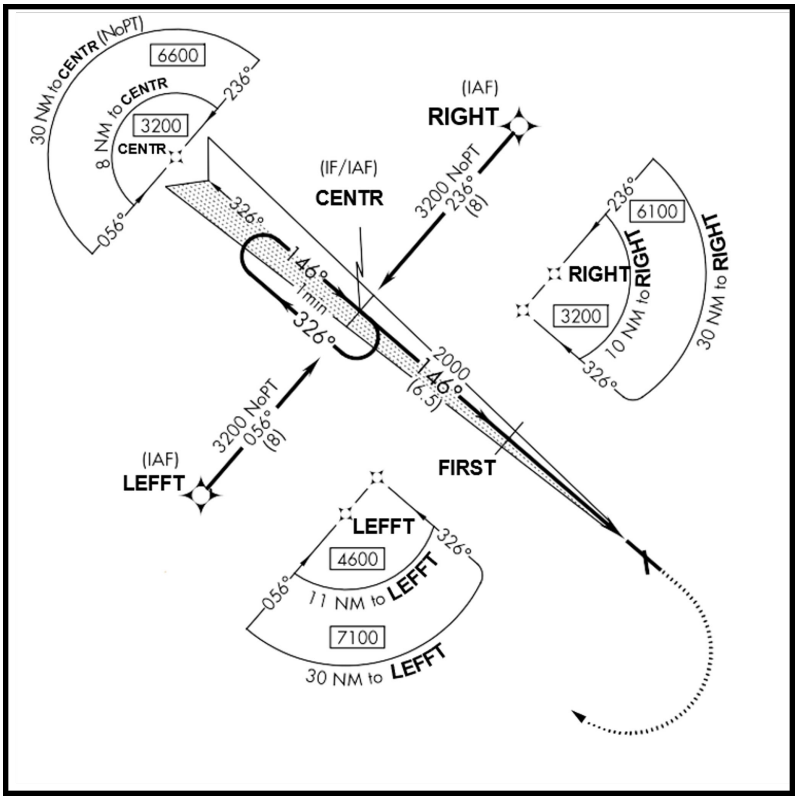


*FIG 4–8–7*
**Intersecting Runway Separation**




**k.** When GPS TESTING NOTAMs are published and testing is actually occurring, inform pilots requesting or cleared for a RNAV approach that GPS may not be available and request intentions. Do not resume RNAV approach operations until certain that GPS interference is no longer a factor or such GPS testing exercise has ceased.

***INTERPRETATION–***
*7110.65, 4–8–1, Approach Clearance (ZAB) (7–17–2015)*
*7110.65, 4–8–1, Approach Clearance (ZKC) (7–17–2015)*

**l.** During times when pilots report GPS anomalies, request the pilot's intentions and/or clear that aircraft for an alternative approach, if available and operational. Announce to other aircraft requesting an RNAV approach that GPS is reported unavailable and request intentions.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–10, NAVAID Malfunctions.*
*FAA Order JO 7110.65, Para 4–7–12, Airport Conditions.*

**m.** When clearing an aircraft for an RNAV approach, and a GPS NOTAM is published (a WAAS NOTAM is not issued), both GPS and WAAS may become unavailable. Therefore, when a GPS anomaly is reported, request the pilot's intentions.

***NOTE–***
*WAAS UNAVAILABLE NOTAMs are published to indicate a failure of a WAAS system component. Airborne GPS/WAAS equipment may revert to GPS-only operation which satisfies the requirements for basic RNAV (GPS) approaches to the airport of intended landing or filed alternate airport, if airborne equipment is approved for such operations.*

## 4–8–2. APPROACH CLEARANCE TO UNCONTROLLED AIRPORTS

When issuing an approach clearance at locations without an operating control tower or where part-time towers are closed, state the name of the airport.

***PHRASEOLOGY–***
*CLEARED (type) APPROACH TO (airport name)*

*or*

*CLEARED APPROACH TO (airport name)*

*(To authorize a pilot to execute his/her choice of instrument approach)*

## 4–8–3. RELAYED APPROACH CLEARANCE

*TERMINAL*

Include the weather report, when it is required and available, when an approach clearance is relayed through a communication station other than an air carrier company radio. You may do this by telling the station to issue current weather.

## 4–8–4. ALTITUDE ASSIGNMENT FOR MILITARY HIGH ALTITUDE INSTRUMENT APPROACHES

Altitudes above those shown on the high altitude instrument approach procedures chart may be specified when required for separation.

***NOTE–***
*To preclude the possibility of aircraft exceeding rate-of-descent or airspeed limitations, the maximum altitudes which may be assigned for any portion of the high altitude instrument approach procedure will be determined through coordination between the ATC facility concerned and the military authority which originated the high altitude instrument approach procedure.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–5, Military Turbojet En Route Descent.*

## 4–8–5. SPECIFYING ALTITUDE

Specify in the approach clearance the altitude shown in the approach procedures when adherence to that altitude is required for separation. When vertical separation will be provided from other aircraft by pilot adherence to the prescribed maximum, minimum, or mandatory altitudes, the controller may omit specifying the altitude in the approach clearance.

***NOTE–***
*Use FAA or NGA instrument approach procedures charts appropriate for the aircraft executing the approach.*

## 4–8–6. CIRCLING APPROACH

**a.** Circling approach instructions may only be given for aircraft landing at airports with operational control towers.

**b.** Include in the approach clearance instructions to circle to the runway in use if landing will be made on a runway other than that aligned with the direction of instrument approach. When the direction of the circling maneuver in relation to the airport/runway is required, state the direction (eight cardinal compass points) and specify a left or right base/downwind leg as appropriate.

***PHRASEOLOGY–***
*CIRCLE TO RUNWAY (number),*

*or*

*CIRCLE (direction using eight cardinal compass points) OF THE AIRPORT/RUNWAY FOR A LEFT/RIGHT BASE/DOWNWIND TO RUNWAY (number).*

***NOTE–***
*Where standard instrument approach procedures (SIAPs) authorize circling approaches, they provide a basic minimum of 300 feet of obstacle clearance at the MDA within the circling area considered. The dimensions of these areas, expressed in distances from the runways, vary for the different approach categories of aircraft. In some cases a SIAP may otherwise restrict circling approach maneuvers.*

**c.** Do not issue clearances, such as "extend downwind leg," which might cause an aircraft to exceed the circling approach area distance from the runways within which required circling approach obstacle clearance is assured.

## 4–8–7. SIDE–STEP MANEUVER

*TERMINAL*

Side-step Maneuver. When authorized by an instrument approach procedure, you may clear an aircraft for an approach to one runway and inform the aircraft that landing will be made on a parallel runway.

***EXAMPLE–***
*"Cleared I–L–S Runway seven left approach. Side-step to runway seven right."*

***NOTE–***
*Side-step maneuvers require higher weather minima/MDA. These higher minima/MDA are published on the instrument approach charts.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–3–2, Closed/Unsafe Runway Information.*
*P/CG Term – Side–step Maneuver.*

## 4–8–8. COMMUNICATIONS RELEASE

If an IFR aircraft intends to land at an airport not served by a tower or FSS, approve a change to the advisory service frequency when you no longer require direct communications.

***PHRASEOLOGY–***
*CHANGE TO ADVISORY FREQUENCY APPROVED.*

***NOTE–***
*An expeditious frequency change permits the aircraft to receive timely local airport traffic information in accordance with AC 90–66, Non-Towered Airport Flight Operations.*

***INTERPRETATION–***
*7110.65, 4–8–8, Communication Release and Applicability to Special VFR Aircraft (9–24–2014)*

## 4–8–9. MISSED APPROACH

**a.** Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automatically authorizes the aircraft to execute the missed approach procedure depicted for the IAP being flown.

**b.** If assignment of the alternate missed approach procedure is necessary, the controller must issue the description as published on the appropriate FAA Form 8260 or military form for the IAP.

**c.** If the alternate missed approach procedure is published and in effect via NOTAM, the procedure description need not be issued to the pilot.

**d.** After an aircraft commences a missed approach, it may be vectored at or above the MVA/MIA or follow the provisions of paragraph 5–6–3, Vectors Below Minimum Altitude.

***NOTE–***
**1.** *In the event of a missed approach involving a turn, unless otherwise cleared, the pilot will proceed to the missed approach point before starting that turn.*

**2.** *Pilots must advise ATC when intending to apply cold temperature compensation and of the amount of compensation required. Pilots will not apply altitude compensation, unless authorized, when assigned an altitude if provided an initial heading to fly or radar vectors in lieu of published missed approach procedures. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–11, Practice Instrument Approaches.*
*FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.*
*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*
*FAA Order 8260.19, Flight Procedures and Airspace.*
*FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Para 2–8–1 and Chapter 16.*
*AIM, Para 5–4–21, Missed Approach.*
*AIM, Para 5–5–5, Missed Approach.*

## 4–8–10. APPROACH INFORMATION

Specify the following in the approach clearance when the pilot says he/she is unfamiliar with the procedure:

**a.** Initial approach altitude.

**b.** Direction and distance from the holding fix within which procedure turn is to be completed.

**c.** Altitude at which the procedure turn is to be made.

**d.** Final approach course and altitude.

**e.** Missed approach procedures if considered necessary.

***PHRASEOLOGY–***
*INITIAL APPROACH AT (altitude), PROCEDURE TURN AT (altitude), (number) MINUTES/MILES (direction), FINAL APPROACH ON (name of NAVAID) (specified) COURSE/RADIAL/AZIMUTH AT (altitude).*

**f.** Applicable notations on instrument approach charts which levy on the pilot the responsibility to comply with or act on an instruction; for example, “Straight-in minima not authorized at night,” “Procedure not authorized when glideslope/glidepath not used,” “Use of procedure limited to aircraft authorized to use airport,” “Procedure not authorized at night,” or a Snowflake icon indicating mandatory cold temperature compensation.

***REFERENCE–***
*AIM, Para 5–1–17, Cold Temperature Operations.*
*AIM, Para 5–5–4, Instrument Approach.*
*AIM, Para 5–5–5, Missed Approach.*

## 4–8–11. PRACTICE INSTRUMENT APPROACHES

Authorize, withdraw authorization, delay, or refuse to authorize practice instrument approaches in accordance with the following:

**a.** When sector/position traffic conditions and/or workload prevent the authorization of practice instrument approaches, advise the pilot of the reason, and if applicable, the anticipated delay until the operation can be approved. Controller-imposed delays should not be indefinite. Normally, approaches in progress should not be terminated.

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.*

**b.** Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft.

***NOTE–***
*The priority afforded other aircraft over practice instrument approaches is not intended to be so rigidly applied that it causes grossly inefficient application of services.*

**c.** IFR aircraft conducting practice instrument approaches must be afforded IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 of this order until the aircraft lands and the flight is terminated, or the pilot cancels the flight plan.

**d.** VFR aircraft conducting practice instrument approaches:

**1.** Must be instructed to maintain VFR on initial contact or as soon as possible thereafter.

***NOTE–***
*This advisory is intended to remind the pilot that even though ATC is providing IFR-type instructions, the pilot is responsible for compliance with the CFRs governing VFR flight.*

**2.** Where a facility directive requires the application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 of this order must be provided. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.*

**3.** Controller responsibility for IFR separation to VFR aircraft begins at the point where the approach clearance becomes effective and ends when the aircraft reaches the missed approach point, unless IFR separation is required for the missed approach procedure as specified in subparagraph e2 below.

**4.** Where a facility directive does not require the application of IFR separation services to VFR aircraft practicing instrument approaches, the controller must:

**(a)** Instruct the pilot to maintain VFR and advise the pilot that separation services are not provided.

***PHRASEOLOGY–***
*"(Aircraft identification) MAINTAIN VFR, PRACTICE APPROACH APPROVED, NO SEPARATION SERVICES PROVIDED."*

**(b)** Provide traffic information or advise the pilot to contact the appropriate facility.

**5.** If an altitude is assigned, including at or above/below altitudes, the altitude specified must meet MVA, minimum safe altitude, or minimum IFR altitude criteria.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.*

**e.** Missed Approaches.

**1.** Unless alternate instructions have been issued, IFR aircraft are automatically authorized to execute the missed approach depicted for the instrument approach being flown.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–9, Missed Approach.*

**2.** VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved and the practice approach is conducted in accordance with subparagraph d2 above, IFR separation must be provided throughout the procedure including the missed approach. If the practice approach is conducted in accordance with subparagraph d3 above, IFR separation services are not required during the missed approach.

## 4–8–12. LOW APPROACH AND TOUCH-AND-GO

Consider an aircraft cleared for a touch-and-go, low approach, or practice approach as an arriving aircraft until that aircraft touches down or crosses the landing threshold; thereafter, consider the aircraft as a departing aircraft. Before the aircraft begins its final descent, issue the appropriate departure instructions the pilot is to follow upon completion of the approach (in accordance with paragraph 4–3–2, Departure Clearances). Climb-out instructions must include a specific heading or a route of flight and altitude, except when the aircraft will maintain VFR and contact the tower.

***EXAMPLE–***
*"After completing low approach, climb and maintain six thousand. Turn right, heading three six zero."*

*"Maintain VFR, contact tower."*

*(Issue other instructions as appropriate.)*

***NOTE–***
*Climb-out instructions may be omitted after the first approach if instructions remain the same.*

## 5–2–24. ADS–B OUT OFF OPERATIONS

Operators of aircraft with functional ADS–B Out avionics installed and requesting an exception from the requirement to transmit at all times must obtain authorization from FAA System Operations Security. The OS/CIC should inform you of any ADS–B Out OFF operations in your area of jurisdiction.

**a.** Do not inform such aircraft that their ADS–B transmitter appears to be inoperative.

**b.** Do not approve any pilot request for ADS–B Out OFF operations. Notify the OS/CIC of the request, including the aircraft call sign and location.

***NOTE–***
*14 CFR section 91.225(f) requires, in part, that "each person operating an aircraft equipped with ADS–B Out must operate this equipment in the transmit mode at all times unless otherwise authorized by the FAA when that aircraft is performing a sensitive government mission for national defense, homeland security, intelligence or law enforcement purposes, and transmitting would compromise the operations security of the mission or pose a safety risk to the aircraft, crew, or people and property in the air or on the ground."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–2–22, Inoperative or Malfunctioning ADS–B Transmitter.*
*FAA Order JO 7210.3, Para 5–4–9, ADS–B Out OFF Operations.*
*FAA Order JO 7110.67, Para 19, ATC Security Procedures for ADS–B Out Off Operations.*

***EXAMPLE–***
*H080/ALB, 080/J121, PH/ALB*

**f.** Coordination format for weather deviations must use the designated characters:
D–deviation
L–left
R–right
N–north
E–east
S–south
W–west
/F–direct next NAVAID/waypoint in the flight plan
D(heading)–(heading)–deviate between two specified headings.

***NOTE–***
**1.** *Two digits specify turns in degrees and must include direction character(s). Three digits specify heading(s).*

**2.** *The inclusion of /(NAVAID) or /(waypoint), when preceded by the designated characters for weather deviations, indicates that a pilot has been authorized to deviate for weather and rejoin the route at the specified NAVAID or waypoint. The use of /F, following the designated weather deviation characters, indicates that a pilot has been authorized to deviate and rejoin the route of flight at the next fix in the route in accordance with paragraph 2–6–4.*

***EXAMPLE–***
*D90L/ATL, DL/KD75U, D090/F*

**3.** *The absence of /NAVAID, /waypoint, or /F after the weather deviation designated characters indicates that the pilot has been authorized to deviate for weather, and the receiving controller must provide a clearance to rejoin the route of flight in accordance with subparagraph 2–1–15c.*

***EXAMPLE–***
*DN, D20L, D30R, D180–210*

**g.** Coordination format for specific assigned airspeeds must use the designation character "S" preceding a three-digit number. A three–digit number followed by a "+" must be used to denote an assigned speed at or greater than the displayed value, or followed by a "–" to denote an assigned speed at or less than the displayed value.

***EXAMPLE–***
*S210, 250+, 280–*

**h.** Aircraft assigned a Mach number must use the designation "M", "M.", or "." preceding the two-digit assigned value. The displayed Mach number must also be followed by a "+" to denote an assigned speed at or greater than the displayed value, or a "–" to denote an assigned speed at or less than the displayed value.

***EXAMPLE–***
*M80, M80+, M80–, M.80, .80, .80–*

**i.** Coordination format for aircraft authorized to conduct celestial navigation training within 30 NM of the route centerline specified within the en route clearance must use "CELNAV."

**j.** Coordination format for aircraft requesting an altitude change must use the designation characters "RQ" preceding a three-digit number.

***EXAMPLE–***
*RQ170, RQ410*

**k.** Coordination format for aircraft requesting a route change must use the designation "RQ/" preceding a specific fix identifier.

***EXAMPLE–***
*RQ/LAX, RQ/NEUTO*

**l.** The acceptance of a handoff by the receiving controller must constitute receipt of the information contained within the en route fourth line data block. This information must not be modified outside of the controller's area

of jurisdiction unless verbally coordinated or specified in a Letter of Agreement or Facility Directive. It is the responsibility of the receiving controller to advise the transferring controller if any information is not understood, or needs to be revised.

***NOTE–***
*Due to system and character limitations the usage of these standardized entries may require additional support via facility directive in order to provide complete coordination.*

**m.** All other control information must be coordinated via other methods.

**3.** Informed of its position unless the aircraft is RNAV, FMS, or DME equipped and being vectored toward a VORTAC/TACAN or waypoint and within the service volume of the NAVAID.

***PHRASEOLOGY–***
*(Position with respect to course/fix along route),*
*RESUME OWN NAVIGATION,*

*or*

*FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix),*

*or*
*RESUME (SID/STAR/transition/procedure).*

***REFERENCE–***
*FAA Order JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.*
*FAA Order JO 7110.65, Para 4–5–7, Altitude Information.*

**f.** Aircraft instructed to resume a procedure which contains published crossing restrictions (SID/STAR) must be issued/reissued all applicable restrictions or be instructed to Climb Via/Descend Via.

***PHRASEOLOGY–***
*CLEARED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude), then CLIMB VIA/DESCEND VIA (SID/STAR)*

***EXAMPLE–***
*"Cleared direct Luxor, then descend via the Ksino One arrival."*
*"Cleared direct HITME, cross HITME at or above one one thousand, then climb via the Boach Five departure."*

**g.** Aircraft may not be vectored off an Obstacle Departure Procedure (ODP), or issued an altitude lower than published altitude on an ODP, until at or above the MVA/MIA, at which time the ODP is canceled.

***NOTE–***
*Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is canceled and ATC cannot clear the aircraft to resume the ODP.*

***REFERENCE–***
*P/CG – Obstacle Departure Procedure.*

**h.** Aircraft vectored off an RNAV route must be recleared to the next waypoint or as requested by the pilot.

**i.** When flight data processing is available, update the route of flight in the computer unless an operational advantage is gained and coordination is accomplished.

**j.** Inform the pilot when a vector will take the aircraft across a previously assigned nonradar route.

***PHRASEOLOGY–***
*EXPECT VECTOR ACROSS (NAVAID radial) (airway/route/course) FOR (purpose).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–6–1, Application.*

## 5–6–3. VECTORS BELOW MINIMUM ALTITUDE

**a.** TERMINAL. As described in facility directives, when vectoring a departing IFR aircraft, or one executing a missed approach, when ISR is not displayed in the full data block and before it reaches the minimum altitude for IFR operations if separation from prominent obstacles shown on the radar scope is applied in accordance with one of the following:

**1.** The flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle, or;

**2.** The flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle, or;

**3.** Radar facilities may vector aircraft below the MVA/MIA, provided:

**(a)** No prominent obstacles are within 10 NM of the departure end of runway (DER).

**(b)** Aircraft must be allowed an uninterrupted climb to meet the MVA/MIA within 10 NM of the DER.

***NOTE–***
*ATC assumes responsibility for terrain and obstacle avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/missed approach procedures, or if issued go-around instructions, except after conducting a visual approach. ATC does not assume this responsibility when utilizing a Diverse Vector Area (DVA) or when operating on SIDs with or without a published range of headings in the departure route description.*

**b.** After reaching the first MVA/MIA sector, all subsequent MVA/MIA sectors encountered must be met.

***REFERENCE–***
*P/CG Term – Obstacle.*
*P/CG Term – Obstruction.*
*P/CG Term – Prominent Obstacle.*

**c.** At those locations where diverse vector areas (DVA) have been established, radar facilities may vector aircraft below the MVA/MIA within the DVA described in facility directives.

**d.** At those locations using radar SIDs, radar facilities may vector aircraft below the MVA/MIA, in accordance with facility directives.

**e.** At locations that vector aircraft conducting a go–around or missed approach, use authorized headings and display those prominent obstacles stipulated in facility directives until reaching the MVA/MIA.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–8–1, Procedures.*
*FAA Order JO 7210.3, Para 3–8–5, Establishing Diverse Vector Area/s (DVA).*
*FAA Order JO 7210.3, Para 10–3–16, Go–Around/Missed Approach.*

**d.** Instructions to do one of the following:

***NOTE–***
*The principal purpose of this paragraph is to ensure that frequency changes are made prior to passing the final approach fix. However, at times it will be desirable to retain an aircraft on the approach control frequency to provide a single-frequency approach or other radar services. When this occurs, it will be necessary to relay tower clearances or instructions to preclude changing frequencies prior to landing or approach termination.*

**1.** Monitor local control frequency, reporting to the tower when over the approach fix.

**2.** Contact the tower on local control frequency.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–8, Communications Release.*

**3.** Contact the final controller on the appropriate frequency if radar service will be provided on final on a different frequency.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–10–8, Final Controller Changeover.*

**4.** When radar is used to establish the final approach fix, inform the pilot that after being advised that he/she is over the fix he/she is to contact the tower on local control frequency.

***EXAMPLE–***
*"Three miles from final approach fix. Turn left heading zero one zero. Maintain two thousand until established on the localizer. Cleared I–L–S runway three six approach. I will advise when over the fix."*

*"Over final approach fix. Contact tower one one eight point one."*

***NOTE–***
*ARSR may be used for establishment of initial approach and intermediate approach fixes only. ASR must be used to establish the final approach fix.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*
*FAA Order JO 7110.65, Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.*

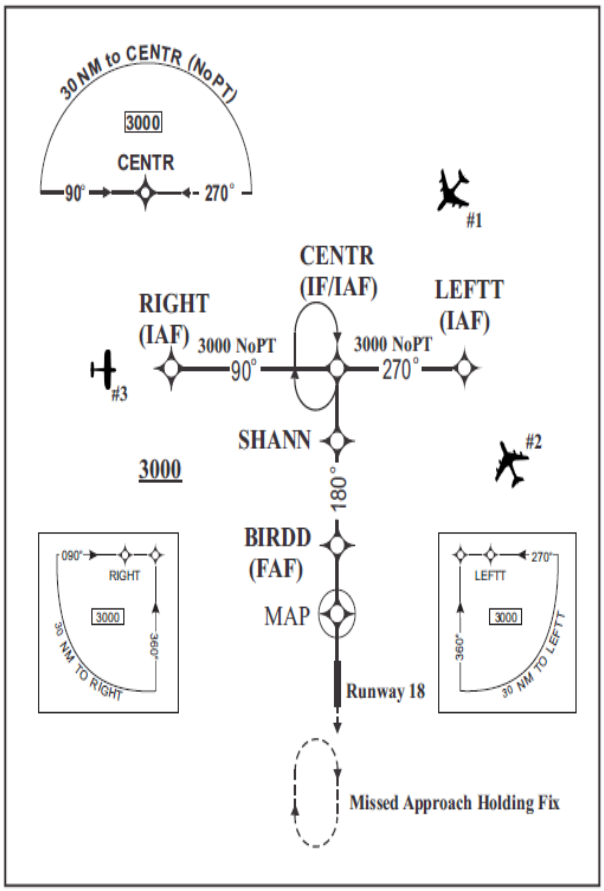
**e.** Where a Terminal Arrival Area (TAA) has been established to support instrument approaches, inform the aircraft of its position relative to the appropriate IAF and issue the approach clearance. (See FIG 5–9–3.)

***EXAMPLE–***
**1.** *Aircraft 1: The aircraft is in the straight in area of the TAA. "Seven miles from CENTR, Cleared R–NAV Runway One Eight Approach."*

**2.** *Aircraft 2: The aircraft is in the left base area of the TAA. "One five miles from LEFTT, Cleared R-NAV Runway One Eight Approach."*

**3.** *Aircraft 3: The aircraft is in the right base area of the TAA. "Four miles from RIGHT, Cleared R-NAV Runway One Eight Approach."*

*FIG 5–9–3*
**Basic "T" Design**




## 5–9–5. APPROACH SEPARATION RESPONSIBILITY

**a.** The radar controller performing the approach control function is responsible for separation of radar arrivals unless visual separation is provided by the tower, or a letter of agreement/facility directive authorizes otherwise. Radar final controllers ensure that established separation is maintained between aircraft under their control and other aircraft established on the same final approach course.

***NOTE–***
*The radar controller may be a controller in an ARTCC, a terminal facility, or a tower controller when authorized to perform the approach control function in a terminal area.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–19, Wake Turbulence.*
*FAA Order JO 7110.65, Section 5, Radar Separation, Para 5–5–1, Application.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 5–5–4, Minima.*
*FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.*

**b.** When timed approaches are being conducted, the radar controller must maintain the radar separation specified in paragraph 6–7–5, Interval Minima, until the aircraft is observed to have passed the final approach fix inbound (nonprecision approaches) or the OM or the fix used in lieu of the outer marker (precision approaches) and is within 5 miles of the runway on the final approach course or until visual separation can be provided by the tower.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–4–6, Receiving Controller Handoff.*
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

*FAA Order JO 7110.65, Para 5−9−6, Simultaneous Dependent Approaches.*
*FAA Order JO 7110.65, Para 6−7−2, Approach Sequence.*

## 5−9−6. SIMULTANEOUS DEPENDENT APPROACHES

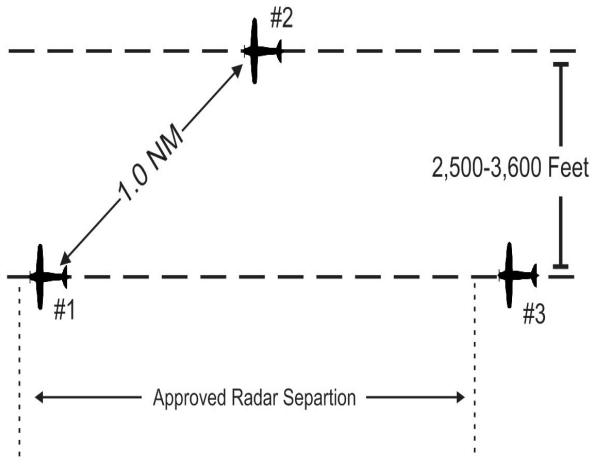
*TERMINAL*

**a.** Apply the following minimum separation when conducting simultaneous dependent approaches:

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn on.

**2.** Provide a minimum of 1 mile radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are at least 2,500 feet but no more than 3,600 feet apart.

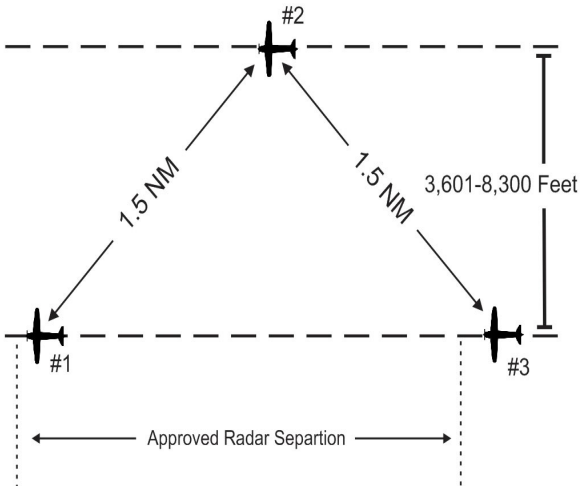
***FIG 5−9−4***
**Simultaneous Dependent Approaches**




***EXAMPLE−***
*In FIG 5−9−4, Aircraft 2 is 1.0 mile from Aircraft 1. Approved radar separation must be maintained between Aircraft 1 and Aircraft 3.*

**3.** Provide a minimum of 1.5 miles radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are more than 3,600 feet but no more than 8,300 feet apart.

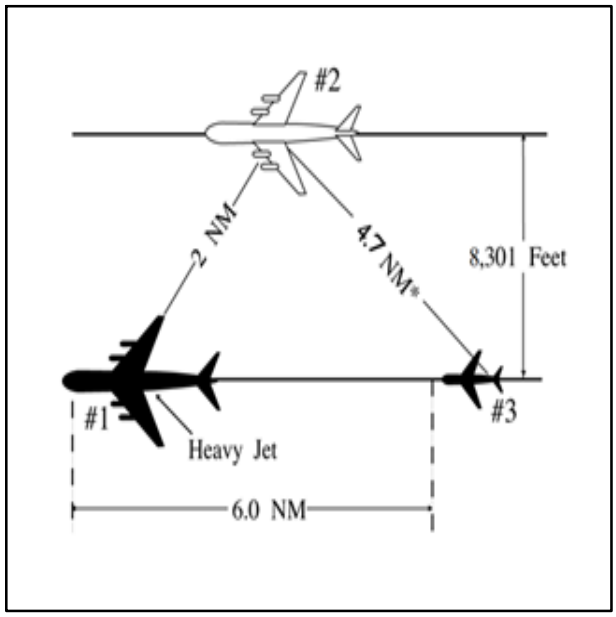
*FIG 5–9–5*
**Simultaneous Dependent Approaches**




***EXAMPLE–***
*In FIG 5–9–5, Aircraft 2 is 1.5 miles from Aircraft 1, and Aircraft 3 is 1.5 miles or more from Aircraft 2. Approved radar separation must be maintained between aircraft on the same final.*

**4.** Provide a minimum of 2 miles radar separation diagonally between successive aircraft on adjacent final approach courses where runway centerlines are more than 8,300 feet but no more than 9,000 feet apart.

*FIG 5–9–6*
**Simultaneous Dependent Approaches**




***EXAMPLE–***
*In FIG 5–9–6, Aircraft 2 is 2 miles from heavy Aircraft 1. Aircraft 3 is a small aircraft and is 6 miles from Aircraft 1. *The resultant separation between Aircraft 2 and 3 is at least 4.7 miles.*

**5.** Provide the minimum approved radar separation between aircraft on the same final approach course.

***REFERENCE–***
*FAA Order JO 7110.65, Section 5, Radar Separation, Para 5–5–4, Minima.*

***REFERENCE–***
*FAA Order JO 7210.3, Para 10-4-6, Simultaneous Approaches (Dependent/Independent).*

**1.** Straight-in landings will be made.

**2.** All appropriate communication, navigation, and surveillance systems are operating normally.

**3.** Inform aircraft that simultaneous independent approaches are in use, or when runway centerlines are less than 4,300 feet, PRM approaches are in use, prior to aircraft departing an outer fix. This information may be provided through the ATIS.

***REFERENCE–***
*P/CG Term – Precision Runway Monitor (PRM) System.*

**4.** Clear the aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

***NOTE–***
*Not applicable to approaches with RF legs.*

**5.** An NTZ is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The primary responsibility for navigation on the final approach course rests with the pilot. Control instructions and information are issued only to ensure separation between aircraft and to prevent aircraft from penetrating the NTZ.

***NOTE–***
*Where RCLS is ≤3400 feet, the normal operating zone (NOZ) is constant at 700 feet; and for RCLS ≥3400 feet, the no transgression zone (NTZ) remains constant at 2000 feet.*

**6.** Monitor all approaches regardless of weather. Monitor local control frequency to receive any aircraft transmission. Issue control instructions as necessary to ensure aircraft do not enter the NTZ.

***NOTE–***
**1.** *Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. For PRM approaches, a transmit–only secondary "PRM frequency" is also used. Facility directives must define responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course.*

**2.** *The aircraft is considered the center of the primary radar return for that aircraft, or, if an FMA or other color final monitor aid is used, the center of the digitized target of that aircraft, for the purposes of ensuring an aircraft does not penetrate the NTZ. The provisions of paragraph 5–5–2, Target Separation, apply also.*

**7.** Communications transfer to the tower controller's frequency must be completed prior to losing 1,000 feet vertical or 3 miles radar separation between aircraft.

**e.** The following procedures must be used by the final monitor controllers:

**1.** For PRM approaches, provide position information to an aircraft that is left/right of the depicted final approach course centerline, and in your judgment is continuing on a track that may penetrate the NTZ.

***PHRASEOLOGY–***
*(Aircraft call sign) I SHOW YOU (left/right) OF THE FINAL APPROACH COURSE.*

**2.** Instruct the aircraft to return to the correct final approach course when aircraft are observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ.

***PHRASEOLOGY–***
*YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,*
*or*
*TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.*

**3.** Instruct aircraft on the adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed penetrating or in your judgment will penetrate the NTZ.

***NOTE–***
*For PRM approaches, an instruction that may include a descent to avoid the deviating aircraft should only be used when there is no other reasonable option available to the controller. In such a case, the descent must not put the aircraft below the MVA.*

***PHRASEOLOGY–***
*TRAFFIC ALERT, (call sign), TURN (right/left) IMMEDIATELY HEADING (degrees), CLIMB/DESCEND AND MAINTAIN (altitude).*

**4.** Terminate radar monitoring when one of the following occurs:

**(a)** Visual separation is applied.

**(b)** The aircraft reports the approach lights or runway in sight.

**(c)** The aircraft is 1 mile or less from the runway threshold, if procedurally required and contained in facility directives.

**5.** Do not inform the aircraft when radar monitoring is terminated.

**f.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous independent approaches, or PRM approaches, if applicable, are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, windshear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–9, Radar Service Termination.*
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–8. SIMULTANEOUS INDEPENDENT CLOSE PARALLEL APPROACHES –PRECISION RUNWAY MONITOR (PRM) APPROACHES

*TERMINAL*

When conducting PRM approaches, apply all pertinent provisions of paragraph 5–9–7 and the following:

**a.** PRM approaches may only be conducted when charted in the approach title, and where instrument approach charts specifically authorize simultaneous approaches.

***REFERENCE–***
*P/CG – Precision Runway Monitor (PRM) System.*
*P/CG – Simultaneous Close Parallel Approaches.*
*P/CG – PRM Approach.*

**b.** PRM approaches must be assigned when conducting instrument approaches to dual and triple parallel runways with runway centerlines separated by less than 4,300 feet.

## 5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)

***TERMINAL***

**a.** Simultaneous offset instrument approaches (SOIA) may be conducted at FAA designated airports that have an authorization issued by the Director, Strategic Operations, AJT–1, in coordination with AFS with parallel runways that have centerlines separated by at least 750 feet and less than 3,000 feet with one final approach course offset by 2.5 to 3.0 degrees; and

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn–on to final approaches.

***NOTE–***
*Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.*

**3.** For runways less than 2,500 feet apart, whenever the ceiling is less than 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses, as described in paragraph 5−5−4, Minima, must be applied unless acceptable mitigating techniques and operational procedures have been documented and verified by an AFS safety assessment and authorized by the Director, Strategic Operations, AJT−1. The wake turbulence mitigation techniques employed will be based on each airport's specific runway geometry and meteorological conditions and implemented through local facility directives.

**4.** Issue all applicable wake turbulence advisories.

***REFERENCE−***
*FAA Order JO 8260.49, Para 13.0, Wake Turbulence Requirements.*
*FAA Order JO 7210.3, Para 10−4−6, Simultaneous Independent Approaches.*
*FAA Order JO 7110.65, Para 2−1−20, Wake Turbulence Cautionary Advisories.*
*FAA Order JO 7110.65, Para 5−5−4, Minima.*

**h.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when conducting SOIA to parallel runways. Factors include but are not limited to wind direction/velocity, wind−shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of the approach in use.

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−1−9, Radar Service Termination.*
*FAA Order JO 7110.65, Para 5−9−2, Final Approach Course Interception.*

## 5−9−10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS

*TERMINAL*

**a.** Simultaneous independent approaches to widely-spaced parallel runways may only be conducted where instrument approach charts specifically authorize simultaneous approaches.

**b.** Apply the following minimum separation when conducting simultaneous independent approaches to runway centerlines that are separated by more than 9,000 feet with a field elevation at or below 5,000 feet MSL, or 9,200 feet between runway centerlines with a field elevation above 5,000 feet MSL:

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft:

**(a)** during turn-on to parallel final approach, or

**(b)** conducting EoR operations, until aircraft are established on a published segment of an approach authorized for EoR operations.

***NOTE−***
*Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway.*

***REFERENCE−***
*FAA Order JO 7210.3, Para 10-4-7, Simultaneous Widely-Spaced Parallel Operations.*
*P/CG Term – Required Navigation Performance (RNP).*
*P/CG Term – Established on RNP Concept.*

**2.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−5−4, Minima.*

**c.** The following conditions are required when applying the minimum separation on widely−spaced parallel courses allowed in subparagraph b:

**1.** Straight-in landings will be made.

**2.** The approach system, radar, and appropriate frequencies are operating normally.

**3.** Inform aircraft that simultaneous approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

**4.** Clear an aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

***NOTE–***
*Not applicable to approaches with RF legs.*

**5.** Separate final and local controllers are required for each final. Aircraft on the final must be on the appropriate final controller frequency for that runway.

**6.** Transfer of communication to the tower controller's frequency must be specified in a facility directive and/or Letter of Agreement.

**d.** The following procedures must be used by the final approach controllers:

***NOTE–***
*There is no requirement for establishment of a NTZ.*

**1.** Instruct the aircraft to return to the correct final approach course when that aircraft is observed to overshoot the turn-on or continue on a track which deviates from the final approach course in the direction of the adjacent approach course.

***PHRASEOLOGY–***
*YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,*
*or*
*TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.*

**2.** Instruct aircraft on adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed, or in the controller's judgment, has deviated from the final approach course in the direction of the adjacent approach course.

***PHRASEOLOGY–***
*TRAFFIC ALERT, (call sign), TURN (left/right) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude)*

**e.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous approaches are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, wind-shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–11. TRANSITIONAL PROCEDURE

When aircraft are conducting simultaneous dependent, independent, or any approaches allowing for reduced separation, and one of the aircraft executes a go-around or has its approach clearance terminated and prior to losing the approved reduced separation, control instructions must be expeditiously issued to increase separation between the applicable aircraft. These control instructions must establish approved separation (for example, altitude and/or lateral separation via divergence). In addition, wake turbulence cautionary advisories must be issued in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.

***PHRASEOLOGY–***
*(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information). If required, (ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT? If the pilot reports traffic in sight, or the answer is in the affirmative, (ACID), MAINTAIN VISUAL SEPARATION*

**(d)** If the pilot reports the traffic in sight and will maintain visual separation (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

***PHRASEOLOGY–***
*(ACID), APPROVED.*

***NOTE–***
*Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.*

**(e)** If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

**(f)** Advise the pilots if the radar targets appear likely to merge.

***NOTE–***
*Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.*

***EXAMPLE–***
*"Radar targets appear likely to merge."*

***PHRASEOLOGY–***
*(ACID) TRAFFIC, (clock position and distance), (direction)–BOUND, (type of aircraft), ON CONVERGING COURSE, HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–4–1, Visual Approach.*
*FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.*

**(g)** Advise the pilots if either aircraft is a heavy.

**(h)** Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20.

***INTERPRETATION–***
*7110.65, 7–2–1b, Visual Separation (5–24–2017)*
*7110.65, 7–2–1c, Visual Separation (7–17–2015)*

**c.** Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas when approved separation is provided before and after the application of visual separation. The nonapproach control tower must apply the procedures contained in subparagraph a1 or a2, when applying visual separation.

***PHRASEOLOGY–***
*VISUAL SEPARATION APPROVED BETWEEN (ACID) AND (ACID),*

*and for departing aircraft,*

*(departing/succeeding aircraft) (ACID), RELEASED.*

**d.** If the nonapproach control tower controller states to the radar controller that they will provide visual separation between arrivals, departures/arrivals and/or successive departures, and states the call signs of all aircraft involved, the radar controller can approve the application of visual separation as requested.

***PHRASEOLOGY–***
*VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED*

***NOTE–***
*A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation of IFR aircraft before and after application of visual separation is an IFR control function that must*

*be applied by the Approach/Departure/En Route facility. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation services are required.*

***REFERENCE–***

*FAA Order JO 7110.65, Para 4–8–11, Practice Instrument Approaches.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.*
*FAA Order JO 7110.65, Para 7–6–1, Application.*
*FAA Order JO 7110.65, Para 7–7–1, Application.*
*FAA Order JO 7110.65, Para 7–7–2, Issuance of EFC.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65, Para 7–7–4, Helicopter Traffic.*
*FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.*
*FAA Order JO 7110.65, Para 7–7–6, Approach Interval.*
*FAA Order JO 7110.65, Para 7–7–7, TRSA Departure Information.*
*FAA Order JO 7110.65, Para 7–8–2, Class C Services.*
*FAA Order JO 7110.65, Para 7–8–3, Separation.*
*FAA Order JO 7110.65, Para 7–8–4, Establishing Two–Way Communications.*
*FAA Order JO 7110.65, Para 7–8–5, Altitude Assignments.*
*FAA Order JO 7110.65, Para 7–8–6, Exceptions.*
*FAA Order JO 7110.65, Para 7–9–1, Application.*
*FAA Order JO 7110.65, Para 7–9–3, Methods.*
*FAA Order JO 7110.65, Para 7–9–4, Separation.*
*FAA Order JO 7110.65, Para 7–9–6, Helicopter Traffic.*
*FAA Order JO 7110.65, Para 7–9–7, Altitude Assignments.*

# Section 4. Approaches

## 7–4–1. VISUAL APPROACH

A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually and clear of clouds to the airport of intended landing. A visual approach is not a standard instrument approach procedure and has no missed approach segment. An aircraft unable to complete a landing from a visual approach must be handled as any go–around and appropriate IFR separation must be provided until the aircraft lands or the pilot cancels their IFR flight plan.

**a.** At airports with an operating control tower, aircraft executing a go–around may be directed to:

**1.** Enter the traffic pattern for landing. An altitude assignment is not required. The pilot is expected to climb to pattern altitude and is responsible to maintain terrain and obstruction avoidance. ATC must provide approved separation or visual separation from other IFR aircraft, or

**2.** Proceed as otherwise instructed by ATC. The pilot is expected to comply with assigned instructions, and responsible to maintain terrain and obstruction avoidance until reaching an ATC assigned altitude. ATC is responsible to provide instructions to the pilot to facilitate a climb to the minimum altitude for instrument operations. ATC must provide approved separation or visual separation from other IFR aircraft.

***NOTE–***
*The pilot is responsible for their own terrain and obstruction avoidance during a go–around after conducting a visual approach. The facility can assign headings towards the lowest terrain and obstructions.*

**b.** At airports without an operating control tower, aircraft executing a go–around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain approved separation from other IFR aircraft.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.*
*FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.*
*FAA Order JO 7210.3, Para 10–3–16, Go–around/Missed Approach.*
*P/CG Term – Go–around.*
*AIM, Para 5–4–23, Visual Approach.*

## 7–4–2. VECTORS FOR VISUAL APPROACH

A vector for a visual approach may be initiated if the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA and the visibility is 3 miles or greater. At airports without weather reporting service there must be reasonable assurance (e.g. area weather reports, PIREPs, etc.) that descent and flight to the airport can be made visually, and the pilot must be informed that weather information is not available.

***PHRASEOLOGY–***
*(Ident) FLY HEADING*

*or*
*TURN RIGHT/LEFT HEADING (degrees) VECTOR FOR VISUAL APPROACH TO (airport name).*

*(If appropriate)*

*WEATHER NOT AVAILABLE.*

***NOTE–***
*At airports where weather information is not available, a pilot request for a visual approach indicates that descent and flight to the airport can be made visually and clear of clouds.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–1, Vectors to Final Approach Course.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–4–3, Clearance for Visual Approach.*
*FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.*
*FAA Order JO 7110.65, Para 7–6–7, Sequencing.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*

## 7–4–3. CLEARANCE FOR VISUAL APPROACH

ARTCCs and approach controls may clear aircraft for visual approaches using the following procedures:

***NOTE–***
*Towers may exercise this authority when authorized by a LOA with the facility that provides the IFR service, or by a facility directive at collocated facilities.*

**a.** Controllers may initiate, or pilots may request, a visual approach even when an aircraft is being vectored for an instrument approach and the pilot subsequently reports:

**1.** The airport or the runway in sight at airports with operating control towers.

**2.** The airport in sight at airports without a control tower.

**b.** Resolve potential conflicts with all other aircraft, advise an overtaking aircraft of the distance to the preceding aircraft and speed difference, and ensure that weather conditions at the airport are VFR or that the pilot has been informed that weather is not available for the destination airport. Upon pilot request, advise the pilot of the frequency to receive weather information where AWOS/ASOS is available.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

***INTERPRETATION–***
*7110.65 7–4–3b, Clearance for Visual Approach and 4–7–10b(2), Approach Information (12–1–2014)*

**c.** Clear an aircraft for a visual approach when:

**1.** The aircraft is number one in the approach sequence, or

**2.** At locations with an operating control tower, the aircraft is to follow a preceding aircraft and the pilot reports the preceding aircraft in sight and is instructed to follow it to the same runway, or

***NOTE–***
*The pilot need not report the airport/runway in sight.*

**3.** At locations with an operating control tower, the pilot reports the airport or runway in sight but not the preceding aircraft. Radar separation must be maintained until visual separation is provided.

**4.** At locations without an operating control tower or where part–time towers are closed, do not specify a runway when issuing a visual approach clearance, issue a visual approach clearance to the airport only.

***PHRASEOLOGY–***
*(at locations with an operating control tower)*

*(Call sign) (control instructions as required) CLEARED VISUAL APPROACH RUNWAY number);*

*or*

*(at locations without an operating control tower)*

*(Call sign) (control instructions as required) CLEARED VISUAL APPROACH TO (airport name)*

*(and if appropriate)*

*WEATHER NOT AVAILABLE*

# Section 5. Special VFR (SVFR)

## 7–5–1. AUTHORIZATION

**a.** SVFR operations in weather conditions less than basic VFR minima are authorized:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7400.11, Airspace Designations and Reporting Points.*
*14 CFR Section 91.157, Special VFR Weather Minimums.*

**1.** At any location not prohibited by 14 CFR part 91, Appendix D or when an exemption to 14 CFR part 91 has been granted and an associated LOA established. 14 CFR part 91 does not prohibit SVFR helicopter operations.

**2.** Only within the lateral boundaries of Class B, Class C, Class D, or Class E surface areas, below 10,000 feet MSL. SVFR is not authorized within Class E extension areas.

**3.** Only when requested by the pilot.

**4.** On the basis of weather conditions reported at the airport for which the surface area is designated.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–5–6, Climb to VFR.*
*FAA Order JO 7110.65, Para 7–5–7, Ground Visibility Below One Mile.*

**5.** When weather conditions are not reported at the airport of intended landing/departure and the pilot advises that VFR cannot be maintained and requests SVFR.

***PHRASEOLOGY–***
*CLEARED TO ENTER/OUT OF/THROUGH, (name) SURFACE AREA*

*and if required,*

*(direction) OF (name) AIRPORT (specified routing),*
*and*

*MAINTAIN SPECIAL V–F–R CONDITIONS,*

*and if required,*

*AT OR BELOW (altitude below 10,000 feet MSL)*

*or as applicable under an exemption from 14 CFR part 91,*

*CLEARED FOR (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*

**b.** Do not authorize VFR operations beneath a broken or overcast ceiling within a surface area when the reported ceiling at the primary airport is less than 1,000 feet. A Special VFR clearance is required.

***REFERENCE–***
*14 CFR Section 91.155(c), Basic VFR Weather Minimums.*

***NOTE–***
*VFR operations are authorized within a surface area when operating above a ceiling that is reported as less than 1,000 feet AGL in accordance with 14 CFR section 91.155(a).*

**c.** SVFR operations may be authorized for aircraft operating in or transiting a Class B, Class C, Class D, or Class E surface area when the primary airport is reporting VFR but the pilot advises that basic VFR cannot be maintained.

***NOTE–***
*The basic requirements for issuance of a SVFR clearance in subparagraph a apply with the obvious exception that weather conditions at the controlling airport are not required to be less than basic VFR minima.*

## 7–5–2. PRIORITY

**a.** SVFR flights may be approved only if arriving and departing IFR aircraft are not delayed.

***EXAMPLE–***
**1.** *A SVFR aircraft has been cleared to enter a Class B, Class C, Class D, or Class E surface area and subsequently an IFR aircraft is ready to depart or is in position to begin an approach. Less overall delay might accrue to the IFR aircraft if the SVFR aircraft is allowed to proceed to the airport and land, rather than leave, a Class B, Class C, Class D, or Class E surface area or be repositioned to provide IFR priority.*

**2.** *A SVFR aircraft is number one for takeoff and located in such a position that the number two aircraft, an IFR flight, cannot taxi past to gain access to the runway. Less overall delay might accrue to the IFR aircraft by releasing the SVFR departure rather than by having the aircraft taxi down the runway to a turnoff point so the IFR aircraft could be released first.*

***NOTE–***
*The priority afforded IFR aircraft over SVFR aircraft is not intended to be so rigidly applied that inefficient use of airspace results. The controller has the prerogative of permitting completion of a SVFR operation already in progress when an IFR aircraft becomes a factor if better overall efficiency will result.*

**b.** Inform an aircraft of the anticipated delay when a SVFR clearance cannot be granted because of IFR traffic. Do not issue an EFC or expected departure time.

***PHRASEOLOGY–***
*EXPECT (number) MINUTES DELAY, (additional instructions as necessary).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*

## 7–5–3. SEPARATION

**a.** Apply nonradar or visual separation between:

**1.** SVFR fixed–wing aircraft.

**2.** SVFR fixed–wing aircraft and SVFR Helicopters.

**3.** SVFR fixed–wing aircraft and IFR aircraft.

***NOTE–***
**1.** *Vertical separation is authorized between SVFR fixed-wing aircraft and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments*

**2.** *Due to the requirements for SVFR fixed–wing aircraft to maintain 1-mile flight visibility and to remain clear of clouds, radar separation is not authorized during SVFR fixed–wing operations. Radar vectors are authorized, as prescribed in paragraph 5–6–1, Application, subparagraph f, to expedite the entrance, exit, and transition of SVFR fixed-wing aircraft through the appropriate surface area.*

***REFERENCE–***
*FAA Order JO 7110.65, Chapter 6, Nonradar.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.*

**b.** Apply nonradar, visual, or IFR radar separation between:

**1.** SVFR Helicopters.

**2.** SVFR Helicopters and IFR aircraft.

***NOTE–***
**1.** *Vertical separation is authorized between SVFR helicopters and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments.*

**2.** *Radar separation as prescribed in Chapter 5 may be applied provided that the facility conducting the operation is authorized to provide radar separation services in accordance with FAA Order JO 7210.3, paragraph 10-5-3, Functional Use of Certified Tower Radar Displays (CTRD), subparagraph b5, and subparagraph d. Facilities that are not delegated airspace or separation responsibility must use CTRDs in accordance with FAA Order JO 7110.65, paragraph 3–1–9, Use of Tower Radar Displays, subparagraph b.*

**c.** Alternate SVFR helicopter separation minima may be established when warranted by the volume and/or complexity of local helicopter operations. Alternate SVFR helicopter separation minima must be established with an LOA with the helicopter operator which must specify, as a minimum, that SVFR helicopters are to maintain visual reference to the surface and adhere to the following aircraft separation minima:

**1.** Between a SVFR helicopter and an arriving or departing IFR aircraft:

**(a)** $^1/_2$ mile. If the IFR aircraft is less than 1 mile from the landing airport.

**(b)** 1 mile. If the IFR aircraft is 1 mile or more from the airport.

**2.** 1 mile between SVFR helicopters. This separation may be reduced to 200 feet if:

**(a)** Both helicopters are departing simultaneously on courses that diverge by at least 30 degrees and:

**(1)** The tower can determine this separation by reference to surface markings; or

**(2)** One of the departing helicopters is instructed to remain at least 200 feet from the other.

***NOTE–***

**1.** *Vertical separation is authorized between SVFR helicopters and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments.*

**2.** *Radar separation as prescribed in Chapter 5 may be applied provided that the facility conducting the operation is authorized to provide radar separation services in accordance with FAA Order JO 7210.3, paragraph 10-5-3, Functional Use of Certified Tower Radar Displays (CTRD), subparagraph b5, and subparagraph d. Facilities that are not delegated airspace or separation responsibility must use CTRDs in accordance with FAA Order JO 7110.65, paragraph 3–1–9, Use of Tower Radar Displays, subparagraph b.*

***REFERENCE–***

*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.*
*FAA Order JO 7110.65, Chapter 6, Nonradar.*
*FAA Order JO 7210.3, Para 10-5-3, Functional Use of Certified Tower Radar Displays.*

## 7–5–4. ALTITUDE ASSIGNMENT

Do not assign a fixed altitude when applying vertical separation, but clear the SVFR aircraft at or below an altitude which is at least 500 feet below any conflicting IFR traffic but not below the MSA prescribed in 14 CFR section 91.119.

***PHRASEOLOGY–***

*MAINTAIN SPECIAL V–F–R CONDITIONS AT OR BELOW (altitude).*

***NOTE–***

**1.** *SVFR aircraft are not assigned fixed altitudes to maintain because of the clearance from clouds requirement.*

**2.** *The MSAs are:*

*(a) Over congested areas, an altitude at least 1,000 feet above the highest obstacle, and*

*(b) Over other than congested areas, an altitude at least 500 feet above the surface.*

*(c) Helicopters may be operated at less than the minimum altitudes prescribed in (a) and (b) above.*

***REFERENCE–***

*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*

## 7–5–5. LOCAL OPERATIONS

**a.** Authorize local SVFR operations for a specified period (series of landings and takeoffs, etc.) upon request if the aircraft can be recalled when traffic or weather conditions require. Where warranted, LOAs may be consummated.

***PHRASEOLOGY–***
*LOCAL SPECIAL V–F–R OPERATIONS IN THE IMMEDIATE VICINITY OF (name) AIRPORT ARE AUTHORIZED UNTIL (time). MAINTAIN SPECIAL V–F–R CONDITIONS.*

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–3–2, Appropriate Subjects.*

**b.** Control facilities may also authorize an FSS to transmit SVFR clearances so that only one aircraft at a time operates in the Class B, Class C, Class D, or Class E surface areas unless pilots agree that they will maintain visual separation with other aircraft operating in the Class B, Class C, Class D, or Class E surface areas. Such authorization concerning visual separation by pilots must be contained in a LOA between the control facility and the FSS.

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–3–3, Developing LOA.*
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

## 7–5–6. CLIMB TO VFR

Authorize an aircraft to climb to VFR upon request if the only weather limitation is restricted visibility.

***PHRASEOLOGY–***
*CLIMB TO V–F–R WITHIN (name) SURFACE AREA/WITHIN (a specified distance) MILES FROM (airport name) AIRPORT, MAINTAIN SPECIAL V–F–R CONDITIONS UNTIL REACHING V–F–R.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*
*FAA Order JO 7110.65, Para 7–5–1, Authorization.*

## 7–5–7. GROUND VISIBILITY BELOW 1 MILE

14 CFR part 91 does not prohibit helicopter SVFR flight when the visibility is less than 1 mile. Treat requests for SVFR fixed-wing operations as follows when the ground visibility is officially reported at an airport as less than 1 mile:

**a.** Inform departing aircraft that ground visibility is less than 1 mile and that a clearance cannot be issued.

**b.** Inform arriving aircraft, operating outside of a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and that, unless an emergency exists, a clearance cannot be issued.

**c.** Inform arriving aircraft, operating VFR/SVFR within a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and request the pilot to advise intentions.

***PHRASEOLOGY–***
*(Name of airport) VISIBILITY LESS THAN 1 MILE. ADVISE INTENTIONS.*

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when ground visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

**d.** Authorize scheduled air carrier aircraft in the U.S. to conduct operations if ground visibility is not less than $^1/_2$ statute mile.

***NOTE–***
*14 CFR part 121 permits landing or takeoff by domestic scheduled air carriers where a local surface restriction to visibility*

*is not less than 1/2 statute mile, provided all turns after takeoff or before landing and all flights beyond 1 statute mile from the airport boundary can be accomplished above or outside the area so restricted. The pilot is solely responsible for determining if the nature of the visibility restriction will permit compliance with the provisions of 14 CFR part 121.*

**e.** Clear an aircraft to fly through the Class B, Class C, Class D, or Class E surface area if the aircraft reports flight visibility is at least 1 statute mile.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 7–5–1, Authorization.*

## 7–5–8. FLIGHT VISIBILITY BELOW 1 MILE

Treat requests for SVFR fixed-wing operations as follows when weather conditions are not reported at an airport and the pilot advises the flight visibility is less than 1 mile:

***NOTE–***
*14 CFR part 91 prescribes the visibility for basic VFR and SVFR operations as the official reported ground visibility at airports where provided and landing or takeoff "flight visibility" where there is no official reported ground visibility.*

**a.** Inform departing aircraft that a clearance cannot be issued.

**b.** Inform arriving aircraft operating outside of a Class B, Class C, Class D or Class E surface area that a clearance cannot be issued unless an emergency exists.

**c.** Request the intentions of an arriving aircraft operating within a Class B, Class C, Class D, or Class E surface area.

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when flight visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

# Section 7. Terminal Radar Service Area (TRSA)– Terminal

## 7–7–1. APPLICATION

Apply TRSA procedures within the designated TRSA in addition to the basic services described in Chapter 7, Visual, Section 6, Basic Radar Service to VFR Aircraft– Terminal.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–2. ISSUANCE OF EFC

Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside the TRSA.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–3. SEPARATION

Separate participating VFR aircraft from IFR aircraft and other participating VFR aircraft by any one of the following:

**a.** Visual separation, as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

***NOTE–***
*Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.*

**b.** 500 feet vertical separation.

**c.** Target resolution, except when ISR is being displayed.

***NOTE–***
*Apply the provisions of paragraph 5–5–4, Minima, subparagraphs g and h, when wake turbulence separation is required.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–4. HELICOPTER TRAFFIC

Helicopters need not be separated from other helicopters. Traffic information must be exchanged, as necessary.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–5. ALTITUDE ASSIGNMENTS

**a.** Altitude information contained in a clearance, instruction, or advisory to VFR aircraft must meet MVA, MSA, or minimum IFR altitude criteria.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–2, Flight Direction.*
*FAA Order JO 7110.65, Para 4–5–3, Exceptions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*

**b.** If required, issue altitude assignments, consistent with the provisions of 14 CFR section 91.119.

***NOTE–***
*The MSAs are:*
**1.** *Over congested areas, an altitude at least 1,000 feet above the highest obstacle; and*
**2.** *Over other than congested areas, an altitude at least 500 feet above the surface.*

**c.** When necessary to assign an altitude for separation purposes to VFR aircraft contrary to 14 CFR section 91.159, advise the aircraft to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer needed for separation or when leaving the TRSA.

***PHRASEOLOGY–***
*RESUME APPROPRIATE VFR ALTITUDES.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–11, Practice Instrument Approaches.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–6. APPROACH INTERVAL

The tower must specify the approach interval.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–7. TRSA DEPARTURE INFORMATION

**a.** At controlled airports within the TRSA, inform a departing aircraft proposing to operate within the TRSA when to contact departure control and the frequency to use. If the aircraft is properly equipped, ground control or clearance delivery must issue the appropriate beacon code.

***NOTE–***
*Departing aircraft are assumed to want TRSA service unless the pilot states, "negative TRSA service," or makes a similar comment. Pilots are expected to inform the controller of intended destination and/or route of flight and altitude.*

**b.** Provide separation until the aircraft leaves the TRSA.

**c.** Inform participating VFR aircraft when leaving the TRSA.

***PHRASEOLOGY–***
*LEAVING THE (name) TRSA,*

*and as appropriate,*

*RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.*

**d.** Aircraft departing satellite controlled airports that will penetrate the TRSA should be provided the same service as those aircraft departing the primary airport. Procedures for handling this situation must be covered in a letter of agreement or facility directives, as appropriate.

**e.** Procedures for handling aircraft departing uncontrolled satellite airports must be advertised in a facility bulletin and service provided accordingly.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

# Chapter 8. Offshore/Oceanic Procedures

## Section 1. General

### 8–1–1. ATC SERVICE

Provide air traffic control service in oceanic controlled airspace in accordance with the procedures in this chapter except when other procedures/minima are prescribed in a directive or a letter of agreement.

***REFERENCE–***
*FAA Order JO 7110.65, Para 1–1–10, Procedural Letters of Agreement (LOAs).*

### 8–1–2. OPERATIONS IN OFFSHORE AIRSPACE AREAS

Provide air traffic control service in offshore airspace areas in accordance with procedures and minima in this chapter. For those situations not covered by this chapter, the provisions in this Order must apply.

### 8–1–3. VFR FLIGHT PLANS

VFR flights in Oceanic FIRs may be conducted in meteorological conditions equal to or greater than those specified in 14 CFR section 91.155, Basic VFR weather minimums. Operations on a VFR flight plan are permitted only between sunrise and sunset and only within:

**a.** Miami, Houston, and San Juan Oceanic Control Areas (CTAs) below FL 180.

**b.** Within the Oakland FIR when operating less than 100 NM seaward from the shoreline within controlled airspace.

**c.** All Oceanic FIR airspace below the Oceanic CTAs.

### 8–1–4. TYPES OF SEPARATION

Separation must consist of at least one of the following:

**a.** Vertical separation;

**b.** Horizontal separation, either;

**1.** Longitudinal; or

**2.** Lateral;

**c.** Radar separation, as specified in Chapter 5, Radar, where radar coverage is adequate.

### 8–1–5. ALTIMETER SETTING

Within oceanic control areas, unless directed and/or charted otherwise, altitude assignment must be based on flight levels and a standard altimeter setting of 29.92 inches Hg.

### 8–1–6. RECEIPT OF POSITION REPORTS

When a position report affecting separation is not received, take action to obtain the report no later than *10 minutes* after the control estimate, unless otherwise specified.

### 8–1–7. OCEANIC ERROR REPORT PROCEDURES

FAA Order JO 7210.632 establishes procedures for reporting Gross Navigation Errors (GNE), height errors, time (longitudinal) errors, intervention, and Special Area of Operations (SAO) verification in oceanic airspace. This data is needed for risk modeling activities to support separation standard reductions.

## 8–1–8. USE OF CONTROL ESTIMATES

Control estimates are the estimated position of aircraft, with reference to time as determined by the ATC automation system in use or calculated by the controller using known wind patterns, previous aircraft transit times, pilot progress reports, and pilot estimates. These estimates may be updated through the receipt of automated position reports and/or manually updated by the controller. Control estimates must be used when applying time–based separation minima.

## 8–1–9. RVSM OPERATIONS

Controller responsibilities for non–RVSM aircraft operating in RVSM airspace must include but not be limited to the following:

**a.** Ensure non–RVSM aircraft are not permitted in RVSM airspace unless they meet the criteria of excepted aircraft and are previously approved by the operations supervisor/CIC.

**b.** In addition to those aircraft listed in Chapter 2, Section 1, paragraph 2–1–29, RVSM Operations, in this order, the following aircraft operating within oceanic airspace or transiting to/from oceanic airspace are excepted:

**1.** Aircraft being initially delivered to the State of Registry or Operator;

**2.** Aircraft that was formerly RVSM approved but has experienced an equipment failure and is being flown to a maintenance facility for repair in order to meet RVSM requirements and/or obtain approval;

**3.** Aircraft being utilized for mercy or humanitarian purposes;

**4.** Within the Oakland, Anchorage, and Arctic FIR's, an aircraft transporting a spare engine mounted under the wing.

**(a)** These exceptions are accommodated on a workload or traffic-permitting basis.

**(b)** All other requirements contained in paragraph 2–1–29, RVSM Operations are applicable to this section.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–29, RVSM Operations.*

## 8–1–10. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into adverse meteorological conditions, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC must separate aircraft by establishing vertical separation, then issue clearance to deviate from track. If there is conflicting traffic and ATC is unable to establish required separation, ATC must:

**a.** Advise the pilot unable to issue clearance for requested deviation;

**b.** Advise the pilot of conflicting traffic; and

**c.** Request pilot's intentions.

***PHRASEOLOGY–***
*UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.*

***NOTE–***
**1.** *The pilot will advise ATC of intentions by the most expeditious means available.*

**2.** *In the event that pilot/controller communications cannot be established or a revised ATC clearance is not available, pilots will follow the procedures outlined in the Aeronautical Information Publication (AIP), Section ENR 7.3, Special Procedures for In-flight Contingencies in Oceanic Airspace; and AC 91–70, Oceanic and Remote Continental Airspace Operations.*

# Section 4. Lateral Separation

## 8–4–1. APPLICATION

Separate aircraft by assigning different flight paths whose widths or protected airspace do not overlap.

Within that portion of the Gulf of America Low Offshore airspace, use 12 NM between aircraft whose flight paths are defined by published Grid System waypoints.

***NOTE–***

**1.** *The Grid System is defined as those waypoints contained within the Gulf of America Low Offshore airspace and published on the IFR Vertical Flight Reference Chart.*

**2.** *Lateral separation minima is contained in:*

*Section 7, North Atlantic ICAO Region.*
*Section 8, Caribbean ICAO Region.*
*Section 9, Pacific ICAO Region.*
*Section 10, North American ICAO Region– Arctic CTA.*

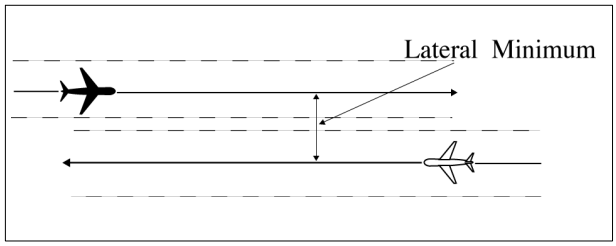
## 8–4–2. SEPARATION METHODS

Lateral separation exists for:

**a. Nonintersecting flight paths:**

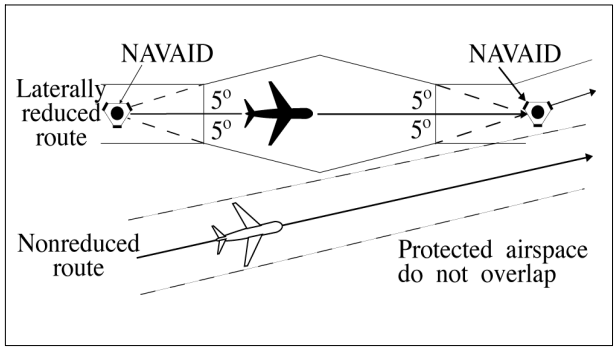
**1.** When the required distance is maintained between the flight paths; or (See FIG 8–4–1.)

***FIG 8–4–1***
**Separation Methods**




**2.** When reduced route protected airspace is applicable, and the protected airspace of the flight paths do not overlap; or (See FIG 8–4–2.)

***FIG 8–4–2***
**Separation Methods**

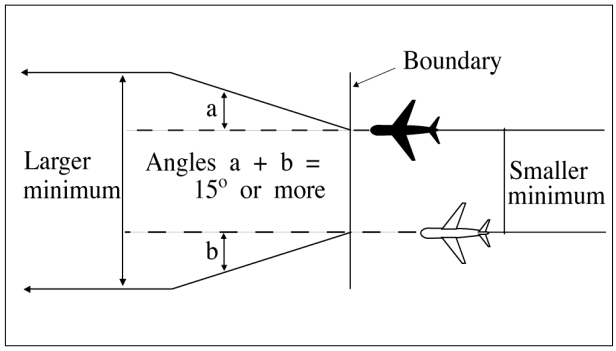



**3.** When aircraft are crossing an oceanic boundary and are entering an airspace with a larger lateral minimum than the airspace being exited; and

**(a)** The smaller separation exists at the boundary; and

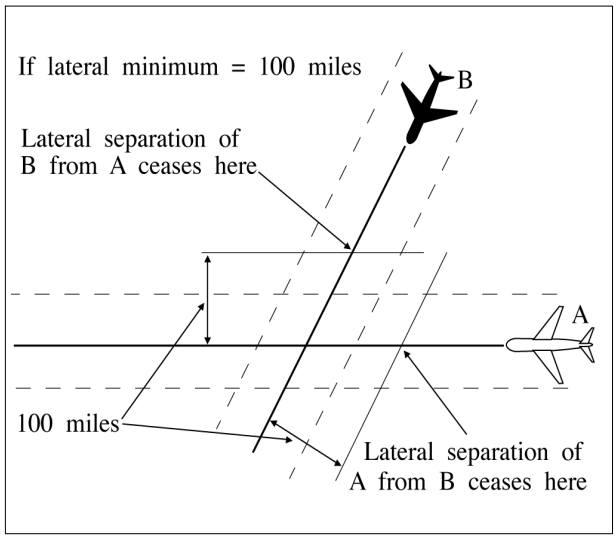
**(b)** Flight paths diverge by 15° or more until the larger minimum is established. (See FIG 8−4−3.)

*FIG 8−4−3*
**Separation Methods**




**b.** Intersecting flight paths with constant and same width protected airspace when either aircraft is at or beyond a distance equal to the applicable lateral separation minimum measured perpendicular to the flight path of the other aircraft. (See FIG 8−4−4.)

*FIG 8−4−4*
**Separation Methods**



# Section 7. North Atlantic ICAO Region

## 8–7–1. APPLICATION

Provide air traffic control services in the North Atlantic ICAO Region with the procedures and minima contained in this section except when noted otherwise.

## 8–7–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

## 8–7–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

**a. Supersonic flight:**

**1.** *10 minutes* provided that:

**(a)** both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

**(1)** The aircraft concerned have reported over a common point; or,

**(2)** If the aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

**(3)** If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

**2.** *15 minutes* between aircraft in supersonic flight not covered in subparagraph a1 above.

**b.** Turbojet operations *(subsonic flight)*:

**1.** Apply the prescribed minima in accordance with paragraph 8–3–3, Mach Number Technique; or

**2.** Where tracks diverge from the common point and the following aircraft is maintaining a greater Mach Number than the preceding aircraft:

**(a)** At least *10 minutes* longitudinal separation exists at the point where the tracks diverge; and

**(b)** At least *5 minutes* longitudinal separation will exist where minimum lateral separation is achieved *(whichever is estimated to occur first)*;

**(1)** At or before the next significant point (normally within ten degrees of longitude along track(s)), or

**(2)** Within 90 minutes of the time the following aircraft passes the common point, or

**(3)** Within 600 NM of the common point.

**3.** Apply *15 minutes* between all other turbojet aircraft.

**c.** Nonturbojet operations:

**1.** Apply *20 minutes* between aircraft operating in the West Atlantic Route System (WATRS), or

**2.** Apply *30 minutes* between aircraft operating outside of the WATRS.

***NOTE–***
*The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to*

*18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.*

**d.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

**1.** The ITP climb or descent has been requested by the pilot;

**2.** The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

**3.** The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

**4.** Both the ITP aircraft and reference aircraft are either on:

**(a)** same identical tracks and any turn at a waypoint must be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that reduce required separation during the ITP.

***NOTE–***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** Speed or route change clearances must not be issued to the ITP aircraft until the ITP climb or descent is completed;

**6.** The altitude difference between the ITP aircraft and any reference aircraft must be 2000 ft or less;

**7.** Instructions to amend speed, altitude or route must not be issued to any reference aircraft until the ITP climb or descent is completed;

**8.** The maximum closing speed between the ITP aircraft and each reference aircraft must be Mach 0.06; and

**9.** The ITP aircraft must not be a reference aircraft in another ITP clearance.

***NOTE–***
*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*

**e.** Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C):

**1.** Apply the minima as specified in TBL 8−7−1 between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

**(a)** Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

**(b)** The required periodic contract from TBL 8−7−1 is established prior to the application of ADS−C longitudinal separation, and

**(c)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

***TBL 8−7−1***
**ADS−C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP See Note 1** | **RSP See Note 2** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| 20 NM | 4 | 240 | 180 | 192 seconds |

***NOTE–***
**1.** *Required Communication Performance (RCP).*

**2.** *Required Surveillance Performance (RSP).*

**2.** Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

**(a)** An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** The aircraft have passed each other by the applicable separation minimum.

***NOTE–***
*ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.*

**3.** When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

**4.** If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

**5.** Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

**(a)** The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;

**(b)** The longitudinal distance between the aircraft, as determined in a) above, is not less than:

**(1)** 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

**(2)** 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

**(c)** The altitude difference between aircraft is not more than 2000 ft;

**(d)** The clearance is for a climb or descent of 4000 ft or less;

**(e)** Both aircraft are filed as single flights not flying in formation with other aircraft;

**(f)** Both aircraft are in level flight at a single altitude;

**(g)** Both aircraft are same direction;

**(h)** Neither aircraft are on a weather deviation;

**(i)** Neither aircraft have an open CPDLC request for a weather deviation;

**(j)** Neither aircraft are on an offset with a rejoin clearance; and

**(k)** The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.

## 8−7−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *23 NM* to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for *23 NM* lateral separation when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS−C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

**b.** *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft that operate in the New York Oceanic CTA/FIR or the San Juan Oceanic CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR.

***NOTE–***
*This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.*

**c.** *60 NM or 1 degree latitude* between:

**1.** Supersonic aircraft operating above FL 275.

**2.** Aircraft which have MNPS or NAT HLA authorization and which:

**(a)** Operate within NAT HLA; or

**(b)** Are in transit to or from NAT HLA; or

**(c)** Operate for part of their flight within, above, or below NAT HLA**.**

***NOTE–***
*This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.*

**d.** *90 NM or 1 and 1/2 degrees latitude* between aircraft not approved for RNP 4 or RNP 10 and which:

**1.** Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami CTA/FIR;

**2.** Operate between points in the U.S. or Canada, and Bermuda;

**3.** Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

**e.** *120 NM or 2 degrees latitude* between aircraft not covered by subparagraphs a, c or d above.

***NOTE–***
*Tracks may be spaced with reference to their difference in latitude, provided that in any interval of 10 degrees of longitude the change in latitude of at least one of the tracks does not exceed 3 degrees when operating south of 58°North.*

# Section 8. Caribbean ICAO Region

## 8–8–1. APPLICATION

Provide air traffic control services in the Caribbean ICAO Region with the procedures and minima contained in this section except when noted otherwise.

## 8–8–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

## 8–8–3. LONGITUDINAL SEPARATION

Provide longitudinal separation between aircraft as follows:

**a.** Supersonic flight:

**1.** *10 minutes* provided both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

**(a)** Both aircraft have reported over a common point; or,

**(b)** If both aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

**(c)** If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

**2.** *15 minutes* between all other aircraft.

**b.** Turbojet operations at or above FL 200 in the Miami Oceanic, Houston Oceanic and San Juan CTAs/FIRs and all altitudes in the West Atlantic Route System (WATRS) and New York Oceanic CTA/FIR *(subsonic flight)*:

**1.** Apply the prescribed minima in accordance with paragraph 8–3–3, Mach Number Technique; or

**2.** In the New York CTA/FIR, where tracks diverge from the common point and the following aircraft is maintaining a greater Mach number than the preceding aircraft:

**(a)** At least *10 minutes* longitudinal separation exists at the point where the tracks diverge; and

**(b)** At least *5 minutes* longitudinal separation will exist where minimum lateral separation is achieved *(whichever is estimated to occur first)*;

**(1)** At or before the next significant point (normally within ten degrees of longitude along track(s)), or

**(2)** Within *90 minutes* of the time the following aircraft passes the common point, or

**(3)** Within *600 NM* of the common point; or

**3.** Apply *15 minutes* between all other turbojet aircraft.

**c.** Turbojet Operations below FL 200 (*subsonic flight*): Apply *20 minutes* between turbojet aircraft operating below FL 200 in the San Juan Oceanic *(outside the WATRS area)*, Miami Oceanic, and Houston Oceanic CTAs/FIRs.

**d.** Nonturbojet operations.

**1.** Apply *20 minutes* between aircraft operating in the WATRS; or

**2.** Apply *20 minutes* between aircraft operating below FL 200 in the Miami Oceanic, Houston Oceanic and San Juan CTAs/FIRs; or

**3.** Apply *30 minutes* between aircraft operating outside of the WATRS in the New York CTA/FIR.

***NOTE–***
*The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.*

**e.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

**1.** The ITP climb or descent has been requested by the pilot;

**2.** The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

**3.** The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

**4.** Both the ITP aircraft and reference aircraft are either on:

**(a)** same identical tracks and any turn at a waypoint must be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that reduce required separation during the ITP.

***NOTE–***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** Speed or route change clearances must not be issued to the ITP aircraft until the ITP climb or descent is completed;

**6.** The altitude difference between the ITP aircraft and any reference aircraft must be 2000 ft or less;

**7.** Instructions to amend speed, altitude or route must not be issued to any reference aircraft until the ITP climb or descent is completed;

**8.** The maximum closing speed between the ITP aircraft and each reference aircraft must be Mach 0.06; and

**9.** The ITP aircraft must not be a reference aircraft in another ITP clearance.

***NOTE–***
*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*

**f.** Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C):

**1.** Apply the minima as specified in TBL 8–8–1 between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

**(a)** Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

**(b)** The required periodic contract from TBL 8–8–1 is established prior to the application of ADS–C longitudinal separation, and

**(c)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

*TBL 8–8–1*
**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| 20 NM | 4 | 240 | 180 | 192 seconds |

**2.** Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

**(a)** An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** The aircraft have passed each other by the applicable separation minimum.

***NOTE–***
*ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.*

**3.** When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

**4.** If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

**5.** Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

**(a)** The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

**(b)** The longitudinal distance between the aircraft, as determined in a) above, is not less than:

**(1)** 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

**(2)** 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

**(c)** The altitude difference between aircraft is not more than 2000 ft;

**(d)** The clearance is for a climb or descent of 4000 ft or less;

**(e)** Both aircraft are filed as single flights not flying in formation with other aircraft;

**(f)** Both aircraft are in level flight at a single altitude;

**(g)** Both aircraft are same direction;

**(h)** Neither aircraft are on a weather deviation;

**(i)** Neither aircraft have an open CPDLC request for a weather deviation;

**(j)** Neither aircraft are on an offset with a rejoin clearance; and

**(k)** The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

## 8–8–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *23 NM* to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for *23 NM* lateral separation when direct controller/pilot communications via voice or Controller Pilot

Data Link Communications (CPDLC), and the required ADS−C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

**b.** *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft that:

**1.** Operate in the New York Oceanic CTA/FIR; or

**2.** Operate in the San Juan Oceanic CTA/FIR; or

**3.** Operate in the Houston Oceanic CTA/FIR; or

**4.** Operate in the Atlantic or Gulf of America portion of the Miami CTA/FIR.

***NOTE−***
*This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.*

**c.** *60 NM* between:

**1.** Supersonic aircraft operating above FL 275 within the New York oceanic CTA/FIR.

**2.** Supersonic aircraft operating at or above FL 450 not covered in subparagraph 1 above.

**3.** Aircraft which have MNPS or NAT HLA authorization and which:

**(a)** Operate within NTA HLA; or

**(b)** Are in transit to or from NAT HLA; or

**(c)** Operate for part of their flight within, above, or below NAT HLA.

***NOTE−***
*This reduced lateral separation must not be used if track-keeping capability of the aircraft has been reduced for any reason.*

**d.** *90 NM* between aircraft not approved for RNP 4 or RNP 10 and which:

**1.** Operate within *WATRS*; or

**2.** Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

**e.** *100 NM* between aircraft operating west of 55°West not covered by subparagraphs a, c, or d above.

**f.** *120 NM* between aircraft operating east of 55°West.

## 8–8–5. VFR CLIMB AND DESCENT

**a.** In the Houston, Miami, and San Juan CTAs, IFR flights may be cleared to climb and descend in VFR conditions only:

**1.** When requested by the pilot; and

**2.** Between sunrise and sunset.

**b.** Apply the following when the flight is cleared:

**1.** If there is a possibility that VFR conditions may become impractical, issue alternative instructions.

**2.** Issue traffic information to aircraft that are not separated in accordance with the minima in this section.

# Section 9. Pacific ICAO Region

## 8–9–1. APPLICATION

Provide air traffic control services in the Pacific ICAO Region with the procedures and minima contained in this section except when noted otherwise.

## 8–9–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

## 8–9–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

**a.** Minima based on time:

**1.** *15 minutes* between aircraft; or

**2.** *10 minutes* between turbojet aircraft whether in level, climbing or descending flight, provided that the aircraft concerned follow the same track or continuously diverging tracks until some other form of separation is provided; or

**3.** The prescribed minima in accordance with paragraph 8–3–3, Mach Number Technique.

**4.** Reciprocal track aircraft – Where lateral separation is not provided, vertical separation must be provided at least *10 minutes* before and after the time the aircraft are estimated to pass or are estimated to have passed.

**b.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

**1.** The ITP climb or descent has been requested by the pilot;

**2.** The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

**3.** The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

**4.** Both the ITP aircraft and reference aircraft are either on:

**(a)** same identical tracks and any turn at a waypoint must be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that reduce required separation during the ITP.

***NOTE–***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** Speed or route change clearance must not be issued to the ITP aircraft until the ITP climb or descent is completed;

**6.** The altitude difference between the ITP aircraft and any reference aircraft must be 2000 ft or less;

**7.** Instructions to amend speed, altitude or route must not be issued to any reference aircraft until the ITP climb or descent is completed;

**8.** The maximum closing speed between the ITP aircraft and each reference aircraft must be Mach 0.06; and

**9.** The ITP aircraft must not be a reference aircraft in another ITP clearance.

***NOTE–***
*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*

**c.** Minima based on distance using Automatic Dependent Surveillance – Contract (ADS–C):

**1.** Apply the minima as specified in TBL 8–9–1, ADS–C Criteria, between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

**(a)** Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

**(b)** The required periodic contract from TBL 8–9–1 is established prior to the application of ADS–C longitudinal separation, and

**(c)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

***TBL 8–9–1***
**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| 20 NM | 4 | 240 | 180 | 192 seconds |

**2.** Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided that:

**(a)** An ADS–C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** The aircraft have passed each other by the applicable separation minimum.

***NOTE–***
*ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.*

**3.** When an ADS–C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS–C report.

**4.** If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

**5.** Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

**(a)** The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

**(b)** The longitudinal distance between the aircraft, as determined in a) above, is not less than:

**(1)** 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

**(2)** 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

**(c)** The altitude difference between aircraft is not more than 2000 ft;

**(d)** The clearance is for a climb or descent of 4000 ft or less;

**(e)** Both aircraft are filed as single flights not flying in formation with other aircraft;

**(f)** Both aircraft are in level flight at a single altitude;

**(g)** Both aircraft are same direction;

**(h)** Neither aircraft are on a weather deviation;

**(i)** Neither aircraft have an open CPDLC request for a weather deviation;

**(j)** Neither aircraft are on an offset with a rejoin clearance; and

**(k)** The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.

**d.** Minima based on distance *without* ADS−C:

**1.** Apply *50 NM* between aircraft cruising, climbing or descending on the same track or reciprocal track that meet the requirements for and are operating within airspace designated for RNP−10 operations provided:

**(a)** Direct controller/pilot communication via voice or CPDLC is maintained; and

**(b)** Separation is established by ensuring that at least *50 NM* longitudinal separation minima exists between aircraft positions as reported by reference to the same waypoint.

**(1)** *Same track aircraft* − whenever possible ahead of both; or

**(2)** *Reciprocal track aircraft* − provided that it has been positively established that the aircraft have passed each other.

**2.** Distance verification must be obtained from each aircraft at least every *24 minutes* to verify that separation is maintained.

**3.** If an aircraft fails to report its position within *3 minutes* after the expected time, the controller must take action to establish communication. If communication is not established within *8 minutes* after the time the report should have been received, the controller must take action to apply another form of separation.

***NOTE−***
*When same track aircraft are at, or are expected to reduce to, the minima, speed control techniques should be applied in order to maintain the required separation.*

## 8−9−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** Within areas where Required Navigation Performance separation and procedures are authorized, apply *50 NM* to RNP 4 or RNP 10 approved aircraft.

**b.** Apply *23 NM* to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within airspace designated for *23 NM* lateral separation when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS−C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

**c.** Apply *100 NM* to aircraft not covered by subparagraphs a and b.

# Section 10. North American ICAO Region

## 8–10–1. APPLICATION

Provide air traffic control services in the North American ICAO Region with the procedures and minima contained in this section.

## 8–10–2. VERTICAL SEPARATION

Provide vertical separation in accordance with:

**a.** Chapter 4, IFR, Section 5, Altitude Assignment and Verification; and

**b.** Facility directives depicting the transition between flight levels and metric altitudes.

## 8–10–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

**a.** Minima based on time:

**1.** *15 minutes* between turbojet aircraft.

**2.** The prescribed minima in accordance with paragraph 8–3–3, Mach Number Technique.

**3.** *20 minutes* between other aircraft.

**b.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

**1.** The ITP climb or descent has been requested by the pilot;

**2.** The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

**3.** The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

**4.** Both the ITP aircraft and reference aircraft are either on:

**(a)** same identical tracks and any turn at a waypoint must be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that reduce required separation during the ITP.

***NOTE–***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** Speed or route change clearance must not be issued to the ITP aircraft until the ITP climb or descent is completed;

**6.** The altitude difference between the ITP aircraft and any reference aircraft must be 2000 ft or less;

**7.** Instructions to amend speed, altitude or route must not be issued to any reference aircraft until the ITP climb or descent is completed;

**8.** The maximum closing speed between the ITP aircraft and each reference aircraft must be Mach 0.06; and

**9.** The ITP aircraft must not be a reference aircraft in another ITP clearance.

***NOTE–***
*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*

**c.** Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C) in the Anchorage Oceanic and Anchorage Continental CTAs only:

***NOTE–***
*The minima described in this paragraph are not applicable within airspace in the Anchorage Arctic CTA.*

**1.** Apply the minima as specified in TBL 8−10−1 between aircraft on the same track within airspace in the Anchorage Oceanic and Anchorage Continental CTAs designated for Required Navigation Performance (RNP), provided:

**(a)** Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

**(b)** The required periodic contract from TBL 8−10−1 is established prior to the application of ADS−C longitudinal separation, and

**(c)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

***TBL 8−10−1***
**ADS−C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| 20 NM | 4 | 240 | 180 | 192 seconds |

**2.** Aircraft on reciprocal tracks in the Anchorage Oceanic and Anchorage Continental CTAs may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

**(a)** An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** The aircraft have passed each other by the applicable separation minimum.

***NOTE–***
*ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.*

**3.** When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

**4.** If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

**5.** Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

**(a)** The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;

**(b)** The longitudinal distance between the aircraft, as determined in a) above, is not less than:

**(1)** 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

**(2)** 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft.

**(c)** The altitude difference between aircraft is not more than 2000 ft;

**(d)** The clearance is for a climb or descent of 4000 ft or less;

**(e)** Both aircraft are filed as single flights not flying in formation with other aircraft;

**(f)** Both aircraft are in level flight at a single altitude;

**(g)** Both aircraft are same direction;

**(h)** Neither aircraft are on a weather deviation;

**(i)** Neither aircraft have an open CPDLC request for a weather deviation;

**(j)** Neither aircraft are on an offset with a rejoin clearance; and

**(k)** The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.

**d.** Minima based on DME/RNAV:

Apply the following DME/RNAV minima in Control 1234H, Control 1487H, and the Norton Sound High Control areas to turbojet aircraft established on or transitioning to the North Pacific (NOPAC) Route System.

**1.** *30 NM* between aircraft when DME reports or radar observations are used to establish the distance, otherwise at least *40 NM* based on RNAV must be applied; and

**2.** Unless both aircraft are radar identified, both aircraft must provide DME/RNAV distance reports via direct voice that indicates the appropriate separation exists; and

**3.** Application of DME/RNAV separation without direct voice communications may not continue for more than *90 minutes;* and

**4.** The preceding aircraft is assigned the same or greater Mach number than the following aircraft; and

**5.** Both aircraft must be advised of the other aircraft involved, including the distance relative to the flights.

***EXAMPLE−***
*"Maintain Mach point eight four, same direction traffic, twelve o'clock, three five miles."*

***REFERENCE−***
*FAA Order JO 7110.65, Para 2−1−21, Traffic Advisories.*

## 8−10−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** Within areas where Required Navigation Performance separation and procedures are authorized, apply *50 NM* to RNP 4 or RNP 10 approved aircraft.

**b.** Apply *23 NM* to approved aircraft (at a minimum, RNP 4, RCP 240, and RSP 180) operating within the Anchorage Oceanic CTA and Anchorage Continental CTA when direct controller/pilot communications via voice or Controller Pilot Data Link Communications (CPDLC) and the required ADS−C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

***NOTE−***
*The minimum described in subparagraph b is not applicable within airspace in the Anchorage Arctic CTA.*

**c.** *90 NM* to aircraft not covered by subparagraphs a or b.

# Section 4. Control Actions

## 10–4–1. TRAFFIC RESTRICTIONS

IFR traffic which could be affected by an overdue or unreported aircraft must be restricted or suspended unless radar separation is used. The facility responsible must restrict or suspend IFR traffic for a period of 30 minutes following the applicable time listed in subparagraphs a through e:

**a.** The time at which approach clearance was delivered to the pilot.

**b.** The EFC time delivered to the pilot.

**c.** The arrival time over the NAVAID serving the destination airport.

**d.** The current estimate, either the control facility's or the pilot's, whichever is later, at:

**1.** The appropriate en route NAVAID or fix, and

**2.** The NAVAID serving the destination airport.

**e.** The release time and, if issued, the clearance void time.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–3–4, Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.*

## 10–4–2. LIGHTING REQUIREMENTS

**a.** *EN ROUTE.* At nontower or non–FSS locations, request the airport management to light all runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

**b.** *TERMINAL.* Operate runway lights, approach lights, and all other required airport lighting systems for at least 30 minutes before the ETA of the unreported aircraft until the aircraft has been located or for 30 minutes after its fuel supply is estimated to be exhausted.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–4–1, Emergency Lighting.*

## 10–4–3. TRAFFIC RESUMPTION

After the 30–minute traffic suspension period has expired, resume normal air traffic control if the operators or pilots of other aircraft concur. This concurrence must be maintained for a period of 30 minutes after the suspension period has expired.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–3–4, Departure Release, Hold for Release, Release Times, Departure Restrictions, and Clearance Void Times.*

## 10–4–4. COMMUNICATIONS FAILURE

Take the following actions, as appropriate, if two-way radio communications are lost with an aircraft:

***NOTE–***
**1.** *When an IFR aircraft experiences two-way radio communications failure, air traffic control is based on anticipated pilot actions. Pilot procedures and recommended practices are set forth in the AIM, CFRs, and pertinent military regulations.*

**2.** *Should the pilot of an aircraft equipped with a coded radar beacon transponder experience a loss of two-way radio capability, the pilot can be expected to adjust the transponder to reply on Mode 3/A* ***Code 7600****.*

**a.** In the event of lost communications with an aircraft under your control jurisdiction use all appropriate means available to reestablish communications with the aircraft. These may include, but are not limited to,

emergency frequencies, NAVAIDs that are equipped with voice capability, FSS, New York Radio, San Francisco Radio, etc.

***NOTE–***
**1.** *New York Radio and San Francisco Radio are operated by Collins Aerospace (formerly ARINC, Incorporated) under contract with the FAA for communications services. These Radio facilities have the capability of relaying information to/from ATC facilities throughout the country.*

**2.** *Aircraft communications addressing and reporting system (ACARS) or selective calling (SELCAL) may be utilized to reestablish radio communications with suitably equipped aircraft. ACARS can be utilized by contacting San Francisco Radio at (800)−621−0140 or New York Radio at (800) 645−1095. Provide the aircraft call sign, approximate location, and contact instructions. In order to utilize the SELCAL system, the SELCAL code for the subject aircraft must be known. If the SELCAL code is not contained in the remarks section of the flight plan, contact the pertinent air carrier dispatch office to determine the code. Then contact San Francisco Radio (for aircraft over the Pacific, U.S. or Mexico) or New York Radio (for aircraft over the Atlantic, Gulf of America, or Caribbean) and provide the aircraft call sign, SELCAL code, approximate location, and contact instructions.*

**b.** Broadcast clearances through any available means of communications including the voice feature of NAVAIDs.

***NOTE–***
**1.** *Some UHF equipped aircraft have VHF navigation equipment and can receive 121.5 MHz.*

**2.** *"Any available means" includes the use of FSS and New York Radio or San Francisco Radio.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4−2−2, Clearance Prefix.*

**c.** Attempt to re-establish communication by having the aircraft use its transponder or make turns to acknowledge clearances and answer questions. Request any of the following in using the transponder:

**1.** Request the aircraft to reply Mode 3/A "IDENT."

**2.** Request the aircraft to reply on Code 7600.

**3.** Request the aircraft to change to "stand-by" for sufficient time for you to be sure that the lack of a target is the result of the requested action.

***PHRASEOLOGY–***
*REPLY NOT RECEIVED, (appropriate instructions).*

*(Action) OBSERVED, (additional instructions/information if necessary).*

**d.** Broadcast a clearance for the aircraft to proceed to its filed alternate airport at the MEA if the aircraft operator concurs.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5−2−4, Radio Failure.*
*FAA Order JO 7110.65, Para 9−2−6, IFR Military Training Routes.*

**e.** If radio communications have not been (re) established with the aircraft after 5 minutes, consider the aircraft's or pilot's activity to be suspicious and report it to the OS/CIC per FAA Order JO 7610.4, Chapter 7, Procedures for Handling Suspicious Flight Situations and Hijacked Aircraft, and paragraph 2−1−26f, Supervisory Notification, of this order.

**(a)** Evidence exists that would ease apprehension about the safety of the aircraft and its occupants; or

**(b)** The concerned aircraft lands. Cancel the ALERFA message by a message addressed to the same stations as the ALERFA message.

**2.** A DETRESFA ends when the:

**(a)** Aircraft successfully lands; or

**(b)** RCC advises of a successful rescue; or

**(c)** RCC advises of termination of SAR activities. Cancel the DETRESFA by a message addressed to the same stations as the DETRESFA message.

**i.** A separate chronological record should be kept on each ALERFA and DETRESFA together with a chart which displays the projected route of the aircraft, position reports received, route of interceptor aircraft, and other pertinent information.

## 10–6–4. INFLIGHT CONTINGENCIES

**a.** If an aircraft over water requests weather, sea conditions, ditching information, and/or assistance from surface vessels, or if the controller feels that this information may be necessary for aircraft safety, it should be requested from the RCC. Also, an appropriate AMVER SURPIC should be asked for if requested by the aircraft or deemed beneficial by control personnel.

***NOTE–***
*The AMVER Center can deliver, in a matter of minutes, a SURPIC of vessels in the area of a SAR incident, including their predicted positions and their characteristics.*

**b.** In all cases of aircraft ditching, the airspace required for SAR operations must be determined by the RCC. The ACC must block that airspace until the RCC advises the airspace is no longer required. An International Notice to Airmen (NOTAM) must be issued describing the airspace affected.

**c.** The following actions will be taken in the event an aircraft must make an emergency descent:

**1.** In the event an aircraft requests an emergency descent:

**(a)** Issue a clearance to the requested altitude if approved separation can be provided.

**(b)** Advise the aircraft of the traffic, and request its intentions if traffic prevents an unrestricted descent.

***PHRASEOLOGY–***
*ATC ADVISES (aircraft identification) UNABLE TO APPROVE UNRESTRICTED DESCENT.*
*TRAFFIC (traffic information).*
*REQUEST INTENTIONS.*

**2.** In the event an aircraft is making or will make an emergency descent without a clearance:

**(a)** Advise other aircraft of the emergency descent.

***PHRASEOLOGY–***
*ATC ADVISES (aircraft identification/all aircraft) BE ALERT FOR EMERGENCY DESCENT IN THE VICINITY OF (latitude/longitude) FROM (altitude/FL) TO (altitude/FL).*

**(b)** Advise other aircraft when the emergency descent is complete.

***PHRASEOLOGY–***
*(Aircraft identification/all aircraft) EMERGENCY DESCENT AT (location) COMPLETED.*

**3.** Upon notification that an aircraft is making an emergency descent through other traffic, take action immediately to safeguard all aircraft concerned.

**4.** When appropriate, broadcast by ATC communications, by radio navigation aids, and/or through aeronautical communication stations/services an emergency message to all aircraft in the vicinity of the descending aircraft. Include the following information:

**(a)** Location of emergency descent.

**(b)** Direction of flight.

**(c)** Type aircraft.

**(d)** Route if appropriate.

**(e)** Altitude vacated.

**(f)** Other information.

***EXAMPLE–***
*"Attention all aircraft in the vicinity of Trout, a northbound D-C Ten on A-T-S Route Alfa Seven Hundred is making an emergency descent from flight level three three zero." (Repeat as you deem appropriate.)*

**5.** If traffic conditions permit, provide traffic information to the affected aircraft.

**6.** Immediately after an emergency broadcast or traffic information has been made, issue appropriate clearances or instructions, as necessary, to all aircraft involved.

## 10–6–5. SERVICES TO RESCUE AIRCRAFT

**a.** Provide IFR separation between the SAR and the aircraft in distress, except when visual or radar contact has been established by the search and rescue aircraft and the pilots of both aircraft concur, IFR separation may be discontinued.

**b.** Clear the SAR aircraft to a fixed clearance limit rather than to the aircraft in distress, which is a moving fix. Issue route clearances that are consistent with that of the distressed aircraft.

**c.** Advise the rescue aircraft, as soon as practicable, of any factors that could adversely affect its mission; e.g., unfavorable weather conditions, anticipated problems, the possibility of not being able to approve an IFR descent through en route traffic, etc.

**d.** Advise the appropriate rescue agency of all pertinent information as it develops.

**e.** Forward immediately any information about the action being taken by the RCC, other organizations, or aircraft to the aircraft concerned.

**f.** Advise the aircraft operator of the current status of the SAR operation as soon as practicable.

**g.** Since prompt, correct, and complete information is the key to successful rescue operations, ensure that this information is swiftly and smoothly supplied to those organizations actively engaged in rescue operations.

# Section 7. Ground Missile Emergencies

## 10–7–1. INFORMATION RELAY

When you receive information concerning a ground missile emergency, notify other concerned facilities and take action to have alerting advisories issued by:

**a.** *EN ROUTE.* Air carrier company radio stations for each VFR company aircraft which is or will be operating in the vicinity of the emergency.

**b.** *EN ROUTE.* FSSs adjacent to the emergency location.

**c.** *TERMINAL.* Relay all information concerning a ground missile emergency to the ARTCC within whose area the emergency exists and disseminate as a NOTAM.

***REFERENCE–***
*P/CG Term – Notice to Airmen.*

## 10–7–2. IFR AND SVFR MINIMA

Reroute IFR and SVFR aircraft as necessary to avoid the emergency location by one of the following minima, or by greater minima when suggested by the notifying official:

**a.** Lateral separation– *1 mile* between the emergency location and either of the following:

**1.** An aircraft under radar control and the emergency location which can be accurately determined by reference to the radar scope.

**2.** The airspace to be protected for the route being flown.

**b.** Vertical separation– *6,000 feet* above the surface over the emergency location.

## 10–7–3. VFR MINIMA

Advise all known VFR aircraft which are, or will be, operating in the vicinity of a ground missile emergency, to avoid the emergency location by 1 mile laterally or 6,000 feet vertically, or by a greater distance or altitude, when suggested by the notifying official.

## 10–7–4. SMOKE COLUMN AVOIDANCE

Advise all aircraft to avoid any observed smoke columns in the vicinity of a ground missile emergency.

## 10–7–5. EXTENDED NOTIFICATION

*EN ROUTE*

When reports indicate that an emergency will exist for an extended period of time, a Notice to Airmen may be issued.

# Section 2. ATOP – Oceanic

The following procedures are applicable to the operation of the ATOP Oceanic Air Traffic Control (ATC) System.

## 13–2–1. DESCRIPTION

**a.** The ATOP ATC System is utilized in designated en route/oceanic airspace. ATOP includes both surveillance and flight data processing, which provides the controllers with automated decision support tools to establish, monitor and maintain separation between aircraft, and aircraft to airspace and terrain.

**b.** ATOP capabilities include:

**1.** MEARTS based radar surveillance processing.

**2.** Conflict Prediction and Reporting.

**3.** Automatic Dependent Surveillance– Broadcast (ADS–B).

**4.** Automatic Dependent Surveillance– Contract (ADS–C).

**5.** Controller Pilot Data Link Communications (CPDLC).

**6.** ATS Interfacility Data Communications (AIDC).

**7.** Weather Deviation Tool.

**8.** Additional Decision Support Tools used primarily for situational awareness.

**9.** Electronic Flight Data including Electronic Flight Strips.

## 13–2–2. CONFLICT DETECTION AND RESOLUTION

The controller must use the most accurate information available to initiate, monitor, and maintain separation.

**a.** Apply the following procedures in airspace where conflict probe is being utilized as a decision support tool:

**1.** Conflict Probe Results.

**(a)** Controllers must assume that the conflict probe separation calculations are accurate.

**(b)** Unless otherwise prescribed in subparagraph a3, controllers must utilize the results from conflict probe to initiate and maintain the prescribed separation minima.

**2.** Conflict Resolution.

**(a)** When a controller is alerted to a conflict, which will occur in his/her sector, take the appropriate action to resolve the conflict.

**(b)** The controller responsible for resolving a conflict must evaluate the alert and take appropriate action as early as practical, in accordance with duty priorities, alert priority, and operational considerations.

**(c)** Unless otherwise specified in facility directives, the controller must take immediate action to resolve any “red” conflicts.

**3.** Overriding Conflict Probe.

**(a)** Controllers must not override conflict probe except for the following situations:

**(1)** The application of a separation standard not recognized by conflict probe listed in subparagraph a8(a), or as identified by facility directive.

**(2)** When action has been taken to resolve the identified conflict and separation has been ensured, or

**(3)** Control responsibility has been delegated to another sector or facility, or

**(4)** Other situations as specified in facility directives.

**(b)** Controllers must continue to ensure that separation is maintained until the overridden conflict is resolved.

**4.** Use of Probe when Issuing Clearances. Utilize conflict probe results when issuing a clearance to ensure that any potential conflict has been given thorough consideration.

**5.** Use of Probe when Accepting Manual Transfers. Prior to manually accepting an aircraft transfer from an external facility ensure that the coordinated flight profile is accurately entered, conflict probe initiated and, if necessary, action is taken to resolve any potential conflicts.

**6.** Trial Probe. The controller can utilize trial probe to assess whether there are any potential conflicts with a proposed clearance or when performing manual coordination.

***NOTE–***
*Once initiated, trial probe does not take into account any changes made to the proposed profile or to any other flight profile in the system. It is an assessment by conflict probe of the current situation at the time the controller enters the trial probe. A trial probe does not alleviate the controller from performing a conflict probe when issuing a clearance or accepting a transfer.*

**7.** System Unable to Perform Conflict Probe for a Specific Aircraft.

**(a)** If a flight's profile becomes corrupted, conflict probe may not be able to correctly monitor separation for that flight. Take the necessary steps to correct an aircraft's flight plan when conflict probe could not be performed.

**(b)** In addition, after verifying flight plan data accuracy, utilize other decision support tools to establish and maintain the appropriate separation minima until such time that conflict probe can be utilized.

**8.** Conflict Probe Limitations.

**(a)** Conflict Probe does not support the following separation minima:

**(1)** Subparagraph 8–4–2a2 – Nonintersecting paths.

**(2)** Subparagraph 8–4–2d – Intersecting flight paths with variable width protected airspace.

**(3)** Subparagraph 8–4–3a – Reduction of Route Protected Airspace, below FL 240.

**(4)** Subparagraph 8–4–3b – Reduction of Route Protected Airspace, at and above FL 240.

**(5)** Subparagraph 8–4–4a1 – Same NAVAID: VOR/VORTAC/TACAN.

**(6)** Subparagraph 8–4–4a2 – Same NAVAID: NDB.

**(7)** Subparagraph 8–4–4c – Dead Reckoning.

**(8)** Paragraph 8–5–4 – Same Direction.

**(9)** Paragraph 8–8–5 – VFR Climb and Descent.

**b.** Additional Decision Support Tools: These support tools include: range/bearing, time of passing, intercept angle, the aircraft situation display (ASD) and electronic flight data.

**1.** The results provided by these additional decision support/controller tools can be used by the controller for maintaining situational awareness and monitoring flight profile information, and for establishing and maintaining separation standards not supported by probe, or when probe is unavailable.

**2.** Under no circumstances must the controller utilize any of the additional decision support tools to override probe results when the applicable separation standard is supported by probe and none of the other conditions for overriding probe apply.

## 13–2–3. INFORMATION MANAGEMENT

**a.** Currency of Information: The sector team is responsible for ensuring that manually entered data is accurate and timely. Ensure that nonconformant messages are handled in a timely manner and that the flight's profile is updated as necessary.

***NOTE–***
*Conflict probe accuracy requires timely updates of data used to model each flight's trajectory. If this data is not current, the aircraft flight profile and probe results may be misleading.*

**b.** Data Block Management.

**1.** Ensure that the data block reflects the most current flight information and controller applied indicators as specified in facility directives.

**2.** Ensure that appropriate and timely action is taken when a special condition code is indicated in the data block.

**c.** Electronic Flight Strip Management.

**1.** Electronic flight strips must be maintained in accordance with facility directives and the following:

**(a)** Annotations. Ensure that annotations are kept up to date.

**(b)** Reduced Separation Flags. Ensure the flags listed below are selected appropriately for each flight:

**(1)** M– Mach Number Technique (MNT).

**(2)** R– Reduced MNT.

**(3)** D– Distance–based longitudinal.

**(4)** W– Reduced Vertical Separation Minimum (RVSM).

**(c)** Degraded RNP. Select when an aircraft has notified ATC of a reduction in navigation capability that affects the applicable separation minima.

**(d)** Restrictions. Ensure restrictions accurately reflect the cleared profile.

**d.** Queue Management.

**1.** Manage all sector and coordination queues in accordance with the appropriate message priority and the controller's priority of duties.

**2.** In accordance with facility directives, ensure that the messages directed to the error queue are processed in a timely manner.

**e.** Window/List Management.

**1.** Ensure that the situation display window title bar is not obscured by other windows and/or lists.

***NOTE–***
*The title bar changes color to denote when priority information on the ASD is being obscured or is out of view.*

**2.** In accordance with facility directives, ensure that designated windows and/or lists are displayed at all times.

## 13–2–4. CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)

**a.** Means of communication.

**1.** When CPDLC is available and CPDLC connected aircraft are operating outside of VHF coverage, CPDLC must be used as the primary means of communication.

**2.** Voice communications may be utilized for CPDLC aircraft when it will provide an operational advantage and/or when workload or equipment capabilities demand.

**3.** When CPDLC is being utilized, a voice backup must exist (e.g., HF, SATCOM, Third party).

**4.** When a pilot communicates via CPDLC, the response should be via CPDLC.

**5.** To the extent possible, the CPDLC message set should be used in lieu of free text messages.

***NOTE–***
*The use of the CPDLC message set ensures the proper "closure" of CPDLC exchanges.*

**b.** Transfer of Communications to the Next Facility.

**1.** When the receiving facility is capable of CPDLC communications, the data link transfer is automatic and is accomplished within facility adapted parameters.

**2.** When a receiving facility is not CPDLC capable, the transfer of communications must be made in accordance with local directives and Letters of Agreement (LOAs).

**c.** Abnormal conditions.

**1.** If any portion of the automated transfer fails, the controller should attempt to initiate the transfer manually. If unable to complete the data link transfer, the controller should advise the pilot to log on to the next facility and send an End Service (EOS) message.

**2.** If CPDLC fails, voice communications must be utilized until CPDLC connections can be reestablished.

**3.** If the CPDLC connection is lost on a specific aircraft, the controller should send a connection request message (CR1) or advise the pilot via backup communications to log on again.

**4.** If CPDLC service is to be canceled, the controller must advise the pilot as early as possible to facilitate a smooth transition to voice communications. Workload permitting, the controller should also advise the pilot of the reason for the termination of data link.

**5.** When there is uncertainty that a clearance was delivered to an aircraft via CPDLC, the controller must continue to protect the airspace associated with the clearance until an appropriate operational response is received from the flight crew. If an expected operational response to a clearance is not received, the controller will initiate appropriate action to ensure that the clearance was received by the flight crew. On initial voice contact with aircraft preface the message with the following:

***PHRASEOLOGY–***
*(Call Sign) CPDLC Failure, (message).*

## 13–2–5. WEATHER DEVIATION TOOL

The weather deviation tool adds an additional converging, diverging, and intersecting (CDI) mileage buffer to the required separation calculated by ATOP when RNP distance-based longitudinal separation is being applied.

**a.** Deviation monitor window pink advisories require further evaluation before approving a weather deviation clearance.

**b.** A pink advisory in the deviation monitor window with a zero or positive value in the +/– column indicates that the aircraft pair is either at or close to the required spacing.

***NOTE–***
**1.** *The CDI mileage buffer is enforced by ATOP conflict probe.*

**2.** *ATOP enforces an increased ADS–C reporting rate of 64 seconds.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 8–7–3, Longitudinal Separation.*
*FAA Order JO 7110.65, Para 8–8–3, Longitudinal Separation.*
*FAA Order JO 7110.65, Para 8–9–3, Longitudinal Separation.*
*FAA Order JO 7110.65, Para 8–10–3, Longitudinal Separation.*
*FAA Order JO 7110.65, Para 13–2–2, Conflict Detection and Resolution.*

## 13–2–6. COORDINATION

In addition to the requirements set forth in Chapter 8, Offshore/Oceanic Procedures, Section 2, Coordination, automated coordination must constitute complete coordination between ATOP sectors, both internally and between sectors across adjacent ATOP facilities, except:

**a.** When the aircraft is in conflict with another in the receiving sector, or

**b.** When otherwise specified in facility directives or LOA.

## 13–2–7. TEAM RESPONSIBILITIES – MULTIPLE PERSON OPERATION

**a.** When operating in a multiple controller operation at a workstation, ensure all ATC tasks are completed according to their priority of duties.

**b.** Multiple controller operation must be accomplished according to facility directives.

# PILOT/CONTROLLER GLOSSARY

**PURPOSE**

**a.** This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

**b.** Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

**c.** Terms used in this glossary that apply to flight service station (FSS) roles are included when they differ from air traffic control functions. These terms are followed by "[FSS]."

**d.** This Glossary will be revised, as necessary, to maintain a common understanding of the system.

**EXPLANATION OF CHANGES**

**e.** Terms Added:
AIRPLANE
POWERED LIFT
ROTORCRAFT
VERTIPAD
VERTIPORT

**f.** Terms Deleted:
LAHSO–DRY
LAHSO–WET
SIMPLIFIED DIRECTIONAL FACILITY (SDF)

**g.** Terms Modified:
AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)
AIRCRAFT
AUTOMATED SERVICES
FLIGHT SERVICE STATION
HELICOPTER
LAHSO
LAND AND HOLD SHORT OPERATIONS
NATIONAL FLIGHT DATA DIGEST (NFDD)
NOTAM
NOTICE TO AIR MISSIONS (NOTAM)
TRAFFIC MANAGEMENT PROGRAM ALERT
TRAFFIC PATTERN
WEATHER RECONNAISSANCE AREA (WRA)

**h.** Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)– An Air Traffic Tactical Operations facility responsible for monitoring and managing the flow of air traffic throughout the NAS, producing a safe, orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

**a.** Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

**b.** Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR part 93.)

(See CHART SUPPLEMENT.)

**c.** U.S. Notice to Airmen (NOTAM) Office. Responsible for collecting, maintaining, and distributing NOTAMs for the U.S. civilian and military, as well as international aviation communities.

(See NOTICE TO AIRMEN.)

**d.** Weather Unit. Monitor all aspects of weather for the U.S. that might affect aviation including cloud cover, visibility, winds, precipitation, thunderstorms, icing, turbulence, and more. Provide forecasts based on observations and on discussions with meteorologists from various National Weather Service offices, FAA facilities, airlines, and private weather services.

**e.** Air Traffic Organization (ATO) Space Operations and Unmanned Aircraft System (UAS); the Office of Primary Responsibility (OPR) for all space and upper class E tactical operations in the National Airspace System (NAS).

AIR TRAFFIC SERVICE– A generic term meaning:

**a.** Flight Information Service.

**b.** Alerting Service.

**c.** Air Traffic Advisory Service.

**d.** Air Traffic Control Service:

**1.** Area Control Service,

**2.** Approach Control Service, or

**3.** Airport Control Service.

AIR TRAFFIC ORGANIZATION (ATO) – The FAA line of business responsible for providing safe and efficient air navigation services in the national airspace system.

AIR TRAFFIC SERVICE (ATS) ROUTES – The term “ATS Route” is a generic term that includes “VOR Federal airways,” “colored Federal airways,” “jet routes,” and “RNAV routes.” The term “ATS route” does not replace these more familiar route names, but serves only as an overall title when listing the types of routes that comprise the United States route structure.

AIRBORNE– An aircraft is considered airborne when all parts of the aircraft are off the ground.

AIRBORNE DELAY– Amount of delay to be encountered in airborne holding.

AIRBORNE REROUTE (ABRR)– A capability within the Traffic Flow Management System used for the timely development and implementation of tactical reroutes for airborne aircraft. This capability defines a set of aircraft–specific reroutes that address a certain traffic flow problem and then electronically transmits them to En Route Automation Modernization (ERAM) for execution by the appropriate sector controllers.

AIRCRAFT– Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew. The term is inclusive of all types, including but not limited to, airplane, glider, lighter-than-air, powered-lift, and rotorcraft.

(See ICAO term AIRCRAFT.)

AIRCRAFT [ICAO]– Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

AIRCRAFT APPROACH CATEGORY– A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the category for that speed must be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, must use the approach Category B minimums when circling to land. The categories are as follows:

**a.** Category A– Speed less than 91 knots.

**b.** Category B– Speed 91 knots or more but less than 121 knots.

**c.** Category C– Speed 121 knots or more but less than 141 knots.

**d.** Category D– Speed 141 knots or more but less than 166 knots.

**e.** Category E– Speed 166 knots or more.

(Refer to 14 CFR part 97.)

AIRCRAFT CLASSES– For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Super, Heavy, Large, and Small as follows:

**a.** Super. The Airbus A-380-800 (A388) and the Antonov An-225 (A225) are classified as super.

**b.** Heavy– Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.

**c.** Large– Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to but not including 300,000 pounds.

**d.** Small– Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

(Refer to AIM.)

AIRCRAFT CONFLICT– Predicted conflict, within EDST of two aircraft, or between aircraft and airspace. A Red alert is used for conflicts when the predicted minimum separation is 5 nautical miles or less. A Yellow alert is used when the predicted minimum separation is between 5 and approximately 12 nautical miles. A Blue alert is used for conflicts between an aircraft and predefined airspace.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT HAZARD AREA (AHA)– Used by ATC to segregate air traffic from a launch vehicle, reentry vehicle, amateur rocket, jettisoned stages, hardware, or falling debris generated by failures associated with any of these activities. An AHA is designated via NOTAM as either a TFR or stationary ALTRV. Unless otherwise specified, the vertical limits of an AHA are from the surface to unlimited.

(See CONTINGENCY HAZARD AREA.)
(See REFINED HAZARD AREA.)
(See TRANSITIONAL HAZARD AREA.)

AIRCRAFT LIST (ACL)– A view available with EDST that lists aircraft currently in or predicted to be in a particular sector's airspace. The view contains textual flight data information in line format and may be sorted into various orders based on the specific needs of the sector team.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT SURGE LAUNCH AND RECOVERY– Procedures used at USAF bases to provide increased launch and recovery rates in instrument flight rules conditions. ASLAR is based on:

**a.** Reduced separation between aircraft which is based on time or distance. Standard arrival separation applies between participants including multiple flights until the DRAG point. The DRAG point is a published location on an ASLAR approach where aircraft landing second in a formation slows to a predetermined airspeed. The DRAG point is the reference point at which MARSA applies as expanding elements effect separation within a flight or between subsequent participating flights.

**b.** ASLAR procedures must be covered in a Letter of Agreement between the responsible USAF military ATC facility and the concerned Federal Aviation Administration facility. Initial Approach Fix spacing requirements are normally addressed as a minimum.

AIRCRAFT WAKE TURBULENCE CATEGORIES– For the purpose of Wake Turbulence Recategorization (RECAT) Separation Minima, ATC groups aircraft into categories ranging from Category A through Category I, dependent upon the version of RECAT that is applied. Specific category assignments vary and are listed in the RECAT Orders.

***AIRMEN'S METEOROLOGICAL INFORMATION (AIRMET)–*** A concise description of an occurrence or expected occurrence of specified en route weather phenomena that may affect the safety of aircraft operations, but at intensities lower than those that require the issuance of a SIGMET. An AIRMET may be issued when any of the following weather phenomena are occurring or expected to occur:

**a.** Moderate turbulence

**b.** Low–level windshear

**c.** Strong surface winds greater than 30 knots

**d.** Moderate icing

**e.** Freezing level

**f.** Mountain obscuration

**g.** IFR

(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

AIRPLANE– An engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings.

AIRPORT– An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

AIRPORT ADVISORY AREA– The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located.

(See LOCAL AIRPORT ADVISORY.)
(Refer to AIM.)

AIRPORT ARRIVAL RATE (AAR)– A dynamic input parameter specifying the number of arriving aircraft which an airport or airspace can accept from the ARTCC per hour. The AAR is used to calculate the desired interval between successive arrival aircraft.

AIRPORT DEPARTURE RATE (ADR)– A dynamic parameter specifying the number of aircraft which can depart an airport and the airspace can accept per hour.

AIRPORT ELEVATION– The highest point of an airport's usable runways measured in feet from mean sea level.

(See TOUCHDOWN ZONE ELEVATION.)
(See ICAO term AERODROME ELEVATION.)

AIRPORT LIGHTING– Various lighting aids that may be installed on an airport. Types of airport lighting include:

**a.** Approach Light System (ALS)– An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his/her final approach for landing. Condenser-Discharge Sequential Flashing

Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

**1.** ALSF-1– Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.

**2.** ALSF-2– Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.

**3.** SSALF– Simplified Short Approach Light System with Sequenced Flashing Lights.

**4.** SSALR– Simplified Short Approach Light System with Runway Alignment Indicator Lights.

**5.** MALSF– Medium Intensity Approach Light System with Sequenced Flashing Lights.

**6.** MALSR– Medium Intensity Approach Light System with Runway Alignment Indicator Lights.

**7.** RLLS– Runway Lead-in Light System Consists of one or more series of flashing lights installed at or near ground level that provides positive visual guidance along an approach path, either curving or straight, where special problems exist with hazardous terrain, obstructions, or noise abatement procedures.

**8.** RAIL– Runway Alignment Indicator Lights– Sequenced Flashing Lights which are installed only in combination with other light systems.

**9.** ODALS– Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI.

(Refer to FAA Order JO 6850.2, Visual Guidance Lighting Systems.)

**b.** Runway Lights/Runway Edge Lights– Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

**c.** Touchdown Zone Lighting– Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

**d.** Runway Centerline Lighting– Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

**e.** Threshold Lights– Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

**f.** Runway End Identifier Lights (REIL)– Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

**g.** Visual Approach Slope Indicator (VASI)– An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is “on path” if he/she sees red/white, “above path” if white/white, and “below path” if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

**h.** Precision Approach Path Indicator (PAPI)– An airport lighting facility, similar to VASI, providing vertical approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights, normally installed on the left side of the runway, and have an effective visual range of about 5 miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high intensity red and white focused light beams which indicate that the pilot is “on path” if the pilot sees an equal number of white lights and red lights, with white to the left of the red; “above path” if the pilot sees more white than red lights; and “below path” if the pilot sees more red than white lights.

**i.** Boundary Lights– Lights defining the perimeter of an airport or landing area.

(Refer to AIM.)

AIRPORT MARKING AIDS– Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

**a.** Visual.

**b.** Nonprecision instrument.

**c.** Precision instrument.

(Refer to AIM.)

AIRPORT REFERENCE POINT (ARP)– The approximate geometric center of all usable runway surfaces.

AIRPORT RESERVATION OFFICE– Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON– A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.)

(See SPECIAL VFR OPERATIONS.)

(See ICAO term AERODROME BEACON.)

(Refer to AIM.)

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)– Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

**a.** ASDE–3– a Surface Movement Radar.

**b.** ASDE–X– a system that uses an X–band Surface Movement Radar, multilateration, and ADS–B.

**c.** Airport Surface Surveillance Capability (ASSC)– A system that uses Surface Movement Radar, multilateration, and ADS–B.

AIRPORT SURVEILLANCE RADAR– Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS–

(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE– A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.)

(See TOWER.)

(See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER–

(See TOWER.)

AIRSPACE CONFLICT– Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)– AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expect Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY– Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED– The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed" means one of the following:

**a.** Indicated Airspeed– The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term “airspeed.”

(Refer to 14 CFR part 1.)

**b.** True Airspeed– The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as “true airspeed” and not shortened to “airspeed.”

AIRSPACE RESERVATION– The term used in oceanic ATC for airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. Airspace reservations must be classified as either “moving” or “stationary.”

(See MOVING AIRSPACE RESERVATION)

(See STATIONARY AIRSPACE RESERVATION.)

(See ALTITUDE RESERVATION.)

AIRSTART– The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

AIRWAY– A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.

(See FEDERAL AIRWAYS.)

(See ICAO term AIRWAY.)

(Refer to 14 CFR part 71.)

(Refer to AIM.)

AIRWAY [ICAO]– A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

AIRWAY BEACON– Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site.

(Refer to AIM.)

AIS–

(See AERONAUTICAL INFORMATION SERVICES.)

AIT–

(See AUTOMATED INFORMATION TRANSFER.)

ALERFA (Alert Phase) [ICAO]– A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

ALERT– A notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict, as detected by Automated Problem Detection (APD).

ALERT AREA–

(See SPECIAL USE AIRSPACE.)

ALERT NOTICE (ALNOT)– A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

ALERTING SERVICE– A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

ALNOT–

(See ALERT NOTICE.)

ALONG–TRACK DISTANCE (ATD)– The horizontal distance between the aircraft’s current position and a fix measured by an area navigation system that is not subject to slant range errors.

ALPHANUMERIC DISPLAY– Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display.

ALTERNATE AERODROME [ICAO]– An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT– An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING– The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).

(Refer to 14 CFR part 91.)

(Refer to AIM.)

ALTITUDE– The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

(See FLIGHT LEVEL.)

**a.** MSL Altitude– Altitude expressed in feet measured from mean sea level.

**b.** AGL Altitude– Altitude expressed in feet measured above ground level.

**c.** Indicated Altitude– The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

(See ICAO term ALTITUDE.)

ALTITUDE [ICAO]– The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

***ALTITUDE READOUT–*** An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability.

(See ALPHANUMERIC DISPLAY.)

(Refer to AIM.)

ALTITUDE RESERVATION (ALTRV)– Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. ALTRVs must be classified as either "moving" or "stationary."

(See MOVING ALTITUDE RESERVATION.)

(See STATIONARY ALTITUDE RESERVATION.)

(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ALTITUDE RESTRICTION– An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

***ALTITUDE RESTRICTIONS ARE CANCELED–*** Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

ALTRV–

(See ALTITUDE RESERVATION.)

AMVER–

(See AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM.)

APB–

(See AUTOMATED PROBLEM DETECTION BOUNDARY.)

APD–

(See AUTOMATED PROBLEM DETECTION.)

APDIA–
(See AUTOMATED PROBLEM DETECTION INHIBITED AREA.)

APPROACH CLEARANCE– Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required.
(See CLEARED APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to AIM.)
(Refer to 14 CFR part 91.)

APPROACH CONTROL FACILITY– A terminal ATC facility that provides approach control service in a terminal area.
(See APPROACH CONTROL SERVICE.)
(See RADAR APPROACH CONTROL FACILITY.)

APPROACH CONTROL SERVICE– Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.
(See ICAO term APPROACH CONTROL SERVICE.)
(Refer to AIM.)

APPROACH CONTROL SERVICE [ICAO]– Air traffic control service for arriving or departing controlled flights.

APPROACH GATE– An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the final approach fix on the side away from the airport and will be no closer than 5 miles from the landing threshold.

APPROACH/DEPARTURE HOLD AREA– The locations on taxiways in the approach or departure areas of a runway designated to protect landing or departing aircraft. These locations are identified by signs and markings.

APPROACH LIGHT SYSTEM–
(See AIRPORT LIGHTING.)

APPROACH SEQUENCE– The order in which aircraft are positioned while on approach or awaiting approach clearance.
(See LANDING SEQUENCE.)
(See ICAO term APPROACH SEQUENCE.)

APPROACH SEQUENCE [ICAO]– The order in which two or more aircraft are cleared to approach to land at the aerodrome.

***APPROACH SPEED–*** The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APPROACH WITH VERTICAL GUIDANCE (APV)– A term used to describe RNAV approach procedures that provide lateral and vertical guidance but do not meet the requirements to be considered a precision approach.

APPROPRIATE ATS AUTHORITY [ICAO]– The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned. In the United States, the “appropriate ATS authority” is the Program Director for Air Traffic Planning and Procedures, ATP-1.

APPROPRIATE AUTHORITY–

**a.** Regarding flight over the high seas: the relevant authority is the State of Registry.

**b.** Regarding flight over other than the high seas: the relevant authority is the State having sovereignty over the territory being overflown.

***APPROPRIATE OBSTACLE CLEARANCE MINIMUM ALTITUDE–*** Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

***APPROPRIATE TERRAIN CLEARANCE MINIMUM ALTITUDE–*** Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

APRON– A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.
(See ICAO term APRON.)

APRON [ICAO]– A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, refueling, parking or maintenance.

ARC– The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

AREA CONTROL CENTER [ICAO]– An air traffic control facility primarily responsible for ATC services being provided IFR aircraft during the en route phase of flight. The U.S. equivalent facility is an air route traffic control center (ARTCC).

AREA NAVIGATION (RNAV)– A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground– or space–based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.
Note: Area navigation includes performance–based navigation as well as other operations that do not meet the definition of performance–based navigation.

AREA NAVIGATION (RNAV) APPROACH CONFIGURATION:

**a.** STANDARD T– An RNAV approach whose design allows direct flight to any one of three initial approach fixes (IAF) and eliminates the need for procedure turns. The standard design is to align the procedure on the extended centerline with the missed approach point (MAP) at the runway threshold, the final approach fix (FAF), and the initial approach/intermediate fix (IAF/IF). The other two IAFs will be established perpendicular to the IF.

**b.** MODIFIED T– An RNAV approach design for single or multiple runways where terrain or operational constraints do not allow for the standard T. The "T" may be modified by increasing or decreasing the angle from the corner IAF(s) to the IF or by eliminating one or both corner IAFs.

**c.** STANDARD I– An RNAV approach design for a single runway with both corner IAFs eliminated. Course reversal or radar vectoring may be required at busy terminals with multiple runways.

**d.** TERMINAL ARRIVAL AREA (TAA)– The TAA is controlled airspace established in conjunction with the Standard or Modified T and I RNAV approach configurations. In the standard TAA, there are three areas: straight-in, left base, and right base. The arc boundaries of the three areas of the TAA are published portions of the approach and allow aircraft to transition from the en route structure direct to the nearest IAF. TAAs will also eliminate or reduce feeder routes, departure extensions, and procedure turns or course reversal.

**1.** STRAIGHT-IN AREA– A 30 NM arc centered on the IF bounded by a straight line extending through the IF perpendicular to the intermediate course.

**2.** LEFT BASE AREA– A 30 NM arc centered on the right corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

**3.** RIGHT BASE AREA– A 30 NM arc centered on the left corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH–
A GPS approach, which requires vertical guidance, used in lieu of another type of PRM approach to conduct approaches to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet, where simultaneous close parallel approaches are permitted. Also used in lieu of an ILS PRM and/or LDA PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations.

ARMY AVIATION FLIGHT INFORMATION BULLETIN– A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

ARO–
(See AIRPORT RESERVATION OFFICE.)

ARRESTING SYSTEM– A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable.
(See ABORT.)
(Refer to AIM.)

ARRIVAL CENTER– The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY– A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL/DEPARTURE WINDOW (ADW)– A depiction presented on an air traffic control display, used by the controller to prevent possible conflicts between arrivals to, and departures from, a runway. The ADW identifies that point on the final approach course by which a departing aircraft must have begun takeoff.

ARRIVAL SECTOR (En Route)– An operational control sector containing one or more meter fixes on or near the TRACON boundary.

ARRIVAL TIME– The time an aircraft touches down on arrival.

ARSR–
(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC–
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ASDA–
(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]–
(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE–
(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASLAR–
(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASR–
(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH–
(See SURVEILLANCE APPROACH.)

ASSOCIATED– A radar target displaying a data block with flight identification and altitude information.
(See UNASSOCIATED.)

ATC–
(See AIR TRAFFIC CONTROL.)

ATC ADVISES– Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.
(See ADVISORY.)

ATC ASSIGNED AIRSPACE– Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.
(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE–
(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS– Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS– Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., "Turn left heading two five zero," "Go around," "Clear the runway."
(Refer to 14 CFR part 91.)

ATC PREFERRED ROUTE NOTIFICATION– EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.
(See ROUTE ACTION NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES– Preferred routes that are not automatically applied by Host.

ATC REQUESTS– Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES– Communications and security tracking provided by an ATC facility in support of the DHS, the DoD, or other Federal security elements in the interest of national security. Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION– The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING– The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DoD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

**a.** Radar (See RADAR.)

**b.** ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

**c.** WAM (See WIDE AREA MULTILATERATION.)
(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS–B, PSR, SSR or any comparable ground–based system that enables the identification of aircraft.

Note: A comparable ground–based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

ATCAA–
(See ATC ASSIGNED AIRSPACE.)

ATCRBS–
(See RADAR.)

ATCSCC–
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT–
(See TOWER.)

ATD–
(See ALONG–TRACK DISTANCE.)

ATIS–
(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]–
(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATO–
(See AIR TRAFFIC ORGANIZATION.)

ATPA–
(See AUTOMATED TERMINAL PROXIMITY ALERT.)

ATS ROUTE [ICAO]– A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note: The term “ATS Route” is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)- The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH–An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED EMERGENCY DESCENT–
(See EMERGENCY DESCENT MODE.)

AUTOMATED INFORMATION TRANSFER (AIT)– A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM– A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.
(See FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)– An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)– The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.
(See EN ROUTE DECISION SUPPORT TOOL.)

AUTOMATED PROBLEM DETECTION INHIBITED AREA (APDIA)– Airspace surrounding a terminal area within which APD is inhibited for all flights within that airspace.

AUTOMATED SERVICES–Services delivered via an automated system (that is, without human interaction). For example, flight plans, Notices to Airmen (NOTAMs), interactive maps, computer-generated text-to-speech messages, short message service, or email.

AUTOMATED TERMINAL PROXIMITY ALERT (ATPA)– Monitors the separation of aircraft on the Final Approach Course (FAC), displaying a graphical notification (cone and/or mileage) when a potential loss of separation is detected. The warning cone (Yellow) will display at 45 seconds and the alert cone (Red) will display at 24 seconds prior to predicted loss of separation. Current distance between two aircraft on final will be displayed in line 3 of the full data block of the trailing aircraft in corresponding colors.

AUTOMATED WEATHER SYSTEM– Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS) and Automated Weather Observation System (AWOS).

AUTOMATED UNICOM– Provides completely automated weather, radio check capability and airport advisory information on an Automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability will be published in the Chart Supplement and approach charts.

AUTOMATIC ALTITUDE REPORT–
(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING– That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM– U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]– A surveillance technique in which aircraft automatically provide, via a data link, data derived from on–board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST (ADS-B)– A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GNSS–derived position and other required information such as identity and velocity, which is then received by a ground–based or space–based receiver for processing and display at an air traffic control facility, as well as by suitably equipped aircraft.
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)
(See COOPERATIVE SURVEILLANCE.)
(See GLOBAL POSITIONING SYSTEM.)
(See SPACE–BASED ADS–B.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN (ADS–B In)– Aircraft avionics capable of receiving ADS–B Out transmissions directly from other aircraft, as well as traffic or weather information transmitted from ground stations.
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–REBROADCAST.)
(See FLIGHT INFORMATION SERVICE–BROADCAST.)
(See TRAFFIC INFORMATION SERVICE–BROADCAST.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT (ADS–B Out)– The transmitter onboard an aircraft or ground vehicle that periodically broadcasts its GNSS–derived position along with other required information, such as identity, altitude, and velocity.
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)

AUTOMATIC DEPENDENT SURVEILLANCE–CONTRACT (ADS–C)– A data link position reporting system, controlled by a ground station, that establishes contracts with an aircraft's avionics that occur automatically whenever specific events occur, or specific time intervals are reached.

AUTOMATIC DEPENDENT SURVEILLANCE- REBROADCAST (ADS-R)– A datalink translation function of the ADS–B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 MHz). The ADS–B system receives the ADS–B messages transmitted on one frequency and ADS–R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS–B In equipped aircraft to see nearby ADS–B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS–B frequency exchange information directly and do not require the ADS–R translation function.

AUTOMATIC DIRECTION FINDER– An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum.
(See BEARING.)
(See NONDIRECTIONAL BEACON.)

AUTOMATIC FLIGHT INFORMATION SERVICE (AFIS) – ALASKA FSSs ONLY– The continuous broadcast of recorded non–control information at airports in Alaska where a FSS provides local airport advisory service. The AFIS broadcast automates the repetitive transmission of essential but routine information such as weather, wind, altimeter, favored runway, braking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/AWOS frequency).

AUTOMATIC TERMINAL INFORMATION SERVICE– The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g., "Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa."
(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.)
(Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO]– The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION– A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

FLIGHT RECORDER [ICAO]– Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Note: See Annex 6 Part I, for specifications relating to flight recorders.

FLIGHT SERVICE STATION (FSS)– An air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSS also relay ATC clearances, process Notices to Airmen, and broadcast aviation weather and aeronautical information. In Alaska, FSS provide Airport Advisory Services.

(See FLIGHT PLAN AREA.)

(See TIE-IN FACILITY.)

FLIGHT STANDARDS DISTRICT OFFICE– An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

FLIGHT TERMINATION– The intentional and deliberate process of terminating the flight of a UA in the event of an unrecoverable lost link, loss of control, or other failure that compromises the safety of flight.

FLIGHT TEST– A flight for the purpose of:

**a.** Investigating the operation/flight characteristics of an aircraft or aircraft component.

**b.** Evaluating an applicant for a pilot certificate or rating.

FLIGHT VISIBILITY–

(See VISIBILITY.)

FLIP–

(See DoD FLIP.)

FLY-BY WAYPOINT– A fly-by waypoint requires the use of turn anticipation to avoid overshoot of the next flight segment.

FLY HEADING (DEGREES)– Informs the pilot of the heading he/she should fly. The pilot may have to turn to, or continue on, a specific compass direction in order to comply with the instructions. The pilot is expected to turn in the shorter direction to the heading unless otherwise instructed by ATC.

FLY-OVER WAYPOINT– A fly-over waypoint precludes any turn until the waypoint is overflown and is followed by an intercept maneuver of the next flight segment.

FLY VISUAL TO AIRPORT–

(See PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT.)

FLYAWAY– When the pilot is unable to effect control of the aircraft and, as a result, the UA is not operating in a predictable or planned manner.

FMA–

(See FINAL MONITOR AID.)

FMS–

(See FLIGHT MANAGEMENT SYSTEM.)

FORMATION FLIGHT– More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway.

**a.** A standard formation is one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman.

**b.** Nonstandard formations are those operating under any of the following conditions:

**1.** When the flight leader has requested and ATC has approved other than standard formation dimensions.

**2.** When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.

**3.** When the operations are conducted in airspace specifically designed for a special activity.

(See ALTITUDE RESERVATION.)
(Refer to 14 CFR part 91.)

***FRC–***

(See REQUEST FULL ROUTE CLEARANCE.)

FREEZE/FROZEN– Terms used in referring to arrivals which have been assigned ACLTs and to the lists in which they are displayed.

FREEZE HORIZON– The time or point at which an aircraft's STA becomes fixed and no longer fluctuates with each radar update. This setting ensures a constant time for each aircraft, necessary for the metering controller to plan his/her delay technique. This setting can be either in distance from the meter fix or a prescribed flying time to the meter fix.

FREEZE SPEED PARAMETER– A speed adapted for each aircraft to determine fast and slow aircraft. Fast aircraft freeze on parameter FCLT and slow aircraft freeze on parameter MLDI.

FRIA–

(See FAA–RECOGNIZED IDENTIFICATION AREA.)

FRICTION MEASUREMENT– A measurement of the friction characteristics of the runway pavement surface using continuous self-watering friction measurement equipment in accordance with the specifications, procedures and schedules contained in AC 150/5320–12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces.

FSDO–

(See FLIGHT STANDARDS DISTRICT OFFICE.)

FSPD–

(See FREEZE SPEED PARAMETER.)

FSS–

(See FLIGHT SERVICE STATION.)

FUEL DUMPING– Airborne release of usable fuel. This does not include the dropping of fuel tanks.

(See JETTISONING OF EXTERNAL STORES.)

FUEL REMAINING– A phrase used by either pilots or controllers when relating to the fuel remaining on board until actual fuel exhaustion. When transmitting such information in response to either a controller question or pilot initiated cautionary advisory to air traffic control, pilots will state the APPROXIMATE NUMBER OF MINUTES the flight can continue with the fuel remaining. All reserve fuel SHOULD BE INCLUDED in the time stated, as should an allowance for established fuel gauge system error.

FUEL SIPHONING– Unintentional release of fuel caused by overflow, puncture, loose cap, etc.

FUEL VENTING–

(See FUEL SIPHONING.)

FUSED TARGET-

(See DIGITAL TARGET)

FUSION [STARS]- the combination of all available surveillance sources (airport surveillance radar [ASR], air route surveillance radar [ARSR], ADS-B, etc.) into the display of a single tracked target for air traffic control separation services. FUSION is the equivalent of the current single-sensor radar display. FUSION performance

# H

HAA–
(See HEIGHT ABOVE AIRPORT.)

HAL–
(See HEIGHT ABOVE LANDING.)

HANDOFF– An action taken to transfer the radar identification of an aircraft from one controller to another if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

HAT–
(See HEIGHT ABOVE TOUCHDOWN.)

***HAVE NUMBERS–*** Used by pilots to inform ATC that they have received runway, wind, and altimeter information only.

HAZARDOUS MATERIALS (HAZMAT)– Hazardous materials as defined by 49 Code of Federal Regulations (CFR) §171.8.
(Refer to 49 CFR part 171.8)
(Refer to AIM)

HAZARDOUS WEATHER INFORMATION–Summary of significant meteorological information (SIGMET/WS), convective significant meteorological information (convective SIGMET/WST), urgent pilot weather reports (urgent PIREP/UUA), center weather advisories (CWA), airmen's meteorological information (AIRMET/WA), graphical airmen's meteorological information (G–AIRMET) and any other weather such as isolated thunderstorms that are rapidly developing and increasing in intensity, or low ceilings and visibilities that are becoming widespread which is considered significant and are not included in a current hazardous weather advisory.

HAZMAT–
(See HAZARDOUS MATERIALS.)

***HEAVY (AIRCRAFT)–***
(See AIRCRAFT CLASSES.)

HEIGHT ABOVE AIRPORT (HAA)– The height of the Minimum Descent Altitude above the published airport elevation. This is published in conjunction with circling minimums.
(See MINIMUM DESCENT ALTITUDE.)

HEIGHT ABOVE LANDING (HAL)– The height above a designated helicopter landing area used for helicopter instrument approach procedures.
(Refer to 14 CFR part 97.)

HEIGHT ABOVE TOUCHDOWN (HAT)– The height of the Decision Height or Minimum Descent Altitude above the highest runway elevation in the touchdown zone (first 3,000 feet of the runway). HAT is published on instrument approach charts in conjunction with all straight-in minimums.
(See DECISION HEIGHT.)
(See MINIMUM DESCENT ALTITUDE.)

HELICOPTER– A rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.
(See ROTORCRAFT.)

HELIPAD– A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HELIPORT– An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

HELIPORT REFERENCE POINT (HRP)– The geographic center of a heliport.

HERTZ– The standard radio equivalent of frequency in cycles per second of an electromagnetic wave. Kilohertz (kHz) is a frequency of one thousand cycles per second. Megahertz (MHz) is a frequency of one million cycles per second.

HF–
(See HIGH FREQUENCY.)

HF COMMUNICATIONS–
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY– The frequency band between 3 and 30 MHz.
(See HIGH FREQUENCY COMMUNICATIONS.)

HIGH FREQUENCY COMMUNICATIONS– High radio frequencies (HF) between 3 and 30 MHz used for air-to-ground voice communication in overseas operations.

HIGH SPEED EXIT–
(See HIGH SPEED TAXIWAY.)

HIGH SPEED TAXIWAY– A long radius taxiway designed and provided with lighting or marking to define the path of aircraft, traveling at high speed (up to 60 knots), from the runway center to a point on the center of a taxiway. Also referred to as long radius exit or turn-off taxiway. The high speed taxiway is designed to expedite aircraft turning off the runway after landing, thus reducing runway occupancy time.

HIGH SPEED TURNOFF–
(See HIGH SPEED TAXIWAY.)

HIGH UPDATE RATE SURVEILLANCE– A surveillance system that provides a sensor update rate of less than 4.8 seconds.

HOLD FOR RELEASE– Used by ATC to delay an aircraft for traffic management reasons; i.e., weather, traffic volume, etc. Hold for release instructions (including departure delay information) are used to inform a pilot or a controller (either directly or through an authorized relay) that an IFR departure clearance is not valid until a release time or additional instructions have been received.
(See ICAO term HOLDING POINT.)

HOLD-IN-LIEU OF PROCEDURE TURN– A hold-in-lieu of procedure turn must be established over a final or intermediate fix when an approach can be made from a properly aligned holding pattern. The hold-in-lieu of procedure turn permits the pilot to align with the final or intermediate segment of the approach and/or descend in the holding pattern to an altitude that will permit a normal descent to the final approach fix altitude. The hold-in-lieu of procedure turn is a required maneuver (the same as a procedure turn) unless the aircraft is being radar vectored to the final approach course, when "NoPT" is shown on the approach chart, or when the pilot requests or the controller advises the pilot to make a "straight-in" approach.

HOLD PROCEDURE– A predetermined maneuver which keeps aircraft within a specified airspace while awaiting further clearance from air traffic control. Also used during ground operations to keep aircraft within a specified area or at a specified point while awaiting further clearance from air traffic control.
(See HOLDING FIX.)
(Refer to AIM.)

HOLDING FIX– A specified fix identifiable to a pilot by NAVAIDs or visual reference to the ground used as a reference point in establishing and maintaining the position of an aircraft while holding.
(See FIX.)
(See VISUAL HOLDING.)
(Refer to AIM.)

# L

LAA–
(See LOCAL AIRPORT ADVISORY.)

LAANC–
(See LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY.)

LAHSO–
(See LAND AND HOLD SHORT OPERATIONS.)

LAND AND HOLD SHORT OPERATIONS– Operations that include simultaneous takeoffs and landings and/or simultaneous landings when a landing aircraft is able and is instructed by the controller to hold short of an intersecting runway or taxiway, a predetermined point, or an approach/departure flightpath. Pilots are expected to promptly inform the controller if the hold short clearance cannot be accepted.
(Refer to AIM.)

LAND–BASED AIR DEFENSE IDENTIFICATION ZONE (ADIZ)– An ADIZ over U.S. metropolitan areas, which is activated and deactivated as needed, with dimensions, activation dates, and other relevant information disseminated via NOTAM.
(See AIR DEFENSE IDENTIFICATION ZONE.)

LANDING AREA– Any locality either on land, water, or structures, including airports/heliports and intermediate landing fields, which is used, or intended to be used, for the landing and takeoff of aircraft whether or not facilities are provided for the shelter, servicing, or for receiving or discharging passengers or cargo.
(See ICAO term LANDING AREA.)

LANDING AREA [ICAO]– That part of a movement area intended for the landing or take-off of aircraft.

LANDING DIRECTION INDICATOR– A device which visually indicates the direction in which landings and takeoffs should be made.
(See TETRAHEDRON.)
(Refer to AIM.)

LANDING DISTANCE AVAILABLE (LDA)– The runway length declared available and suitable for a landing airplane.
(See ICAO term LANDING DISTANCE AVAILABLE.)

LANDING DISTANCE AVAILABLE [ICAO]– The length of runway which is declared available and suitable for the ground run of an aeroplane landing.

LANDING MINIMUMS– The minimum visibility prescribed for landing a civil aircraft while using an instrument approach procedure. The minimum applies with other limitations set forth in 14 CFR part 91 with respect to the Minimum Descent Altitude (MDA) or Decision Height (DH) prescribed in the instrument approach procedures as follows:

**a.** Straight-in landing minimums. A statement of MDA and visibility, or DH and visibility, required for a straight-in landing on a specified runway, or

**b.** Circling minimums. A statement of MDA and visibility required for the circle-to-land maneuver.

Note: Descent below the MDA or DH must meet the conditions stated in 14 CFR section 91.175.
(See CIRCLE-TO-LAND MANEUVER.)
(See DECISION HEIGHT.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See MINIMUM DESCENT ALTITUDE.)
(See STRAIGHT-IN LANDING.)
(See VISIBILITY.)
(Refer to 14 CFR part 91.)

LANDING ROLL– The distance from the point of touchdown to the point where the aircraft can be brought to a stop or exit the runway.

LANDING SEQUENCE– The order in which aircraft are positioned for landing.
(See APPROACH SEQUENCE.)

LAST ASSIGNED ALTITUDE– The last altitude/flight level assigned by ATC and acknowledged by the pilot.
(See MAINTAIN.)
(Refer to 14 CFR part 91.)

LATERAL NAVIGATION (LNAV)– A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

LATERAL SEPARATION– The lateral spacing of aircraft at the same altitude by requiring operation on different routes or in different geographical locations.
(See SEPARATION.)

LDA–
(See LOCALIZER TYPE DIRECTIONAL AID.)
(See LANDING DISTANCE AVAILABLE.)
(See ICAO Term LANDING DISTANCE AVAILABLE.)

LF–
(See LOW FREQUENCY.)

LIGHTED AIRPORT– An airport where runway and obstruction lighting is available.
(See AIRPORT LIGHTING.)
(Refer to AIM.)

LIGHT GUN– A handheld directional light signaling device which emits a brilliant narrow beam of white, green, or red light as selected by the tower controller. The color and type of light transmitted can be used to approve or disapprove anticipated pilot actions where radio communication is not available. The light gun is used for controlling traffic operating in the vicinity of the airport and on the airport movement area.
(Refer to AIM.)

LIGHT-SPORT AIRCRAFT (LSA)– An FAA-registered aircraft, other than a helicopter or powered-lift, that meets certain weight and performance. Principally it is a single–engine aircraft with a maximum of two seats and weighing no more than 1,430 pounds if intended for operation on water, or 1,320 pounds if not. It must be of simple design (fixed landing gear (except if intended for operations on water or a glider), piston powered, nonpressurized, with a fixed or ground adjustable propeller). Performance is also limited to a maximum airspeed in level flight of not more than 120 knots calibrated airspeed (CAS), have a maximum never-exceed speed of not more than 120 knots CAS for a glider, and have a maximum stalling speed, without the use of lift-enhancing devices of not more than 45 knots CAS. It may be certificated as either Experimental LSA or as a Special LSA aircraft. A minimum of a sport pilot certificate is required to operate light-sport aircraft.
(Refer to 14 CFR part 1, §1.1.)

LINE UP AND WAIT (LUAW)– Used by ATC to inform a pilot to taxi onto the departure runway to line up and wait. It is not authorization for takeoff. It is used when takeoff clearance cannot immediately be issued because of traffic or other reasons.
(See CLEARED FOR TAKEOFF.)

LOCAL AIRPORT ADVISORY (LAA)– A service available only in Alaska and provided by facilities that are located on the landing airport, have a discrete ground–to–air communication frequency or the tower frequency when the tower is closed, automated weather reporting with voice broadcasting, and a continuous ASOS/AWOS data display, other continuous direct reading instruments, or manual observations available to the specialist.
(See AIRPORT ADVISORY AREA.)

LOCAL TRAFFIC– Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.
(See TRAFFIC PATTERN.)

LOCALIZER– The component of an ILS which provides course guidance to the runway.
(See INSTRUMENT LANDING SYSTEM.)
(See ICAO term LOCALIZER COURSE.)
(Refer to AIM.)

LOCALIZER COURSE [ICAO]– The locus of points, in any given horizontal plane, at which the DDM (difference in depth of modulation) is zero.

LOCALIZER OFFSET– An angular offset of the localizer aligned within 3° of the runway alignment.

LOCALIZER TYPE DIRECTIONAL AID (LDA)– A localizer with an angular offset that exceeds 3° of the runway alignment, used for nonprecision instrument approaches with utility and accuracy comparable to a localizer, but which are not part of a complete ILS.
(Refer to AIM.)

LOCALIZER TYPE DIRECTIONAL AID (LDA) PRECISION RUNWAY MONITOR (PRM) APPROACH– An approach, which includes a glideslope, used in conjunction with an ILS PRM, RNAV PRM or GLS PRM approach to an adjacent runway to conduct Simultaneous Offset Instrument Approaches (SOIA) to parallel runways whose centerlines are separated by less than 3,000 feet and at least 750 feet. NTZ monitoring is required to conduct these approaches.
(See SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA).)
(Refer to AIM)

LOCALIZER USABLE DISTANCE– The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received.
(Refer to AIM.)

LOCATOR [ICAO]– An LM/MF NDB used as an aid to final approach.
Note: A locator usually has an average radius of rated coverage of between 18.5 and 46.3 km (10 and 25 NM).

LONG RANGE NAVIGATION–
(See LORAN.)

LONGITUDINAL SEPARATION– The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles.
(See SEPARATION.)
(Refer to AIM.)

LORAN– An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750-1950 kHz frequency band. Loran C and D operate in the 100-110 kHz frequency band. In 2010, the U.S. Coast Guard terminated all U.S. LORAN-C transmissions.
(Refer to AIM.)

LOST COMMUNICATIONS– Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in 14 CFR part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach.
(Refer to 14 CFR part 91.)
(Refer to AIM.)

LOST LINK (LL)– An interruption or loss of the control link, or when the pilot is unable to effect control of the aircraft and, as a result, the UA will perform a predictable or planned maneuver. Loss of command and control link between the Control Station and the aircraft. There are two types of links:

**a.** An uplink which transmits command instructions to the aircraft, and

**b.** A downlink which transmits the status of the aircraft and provides situational awareness to the pilot.

LOST LINK PROCEDURE– Preprogrammed or predetermined mitigations to ensure the continued safe operation of the UA in the event of a lost link (LL). In the event positive link cannot be established, flight termination must be implemented.

LOW ALTITUDE AIRWAY STRUCTURE– The network of airways serving aircraft operations up to but not including 18,000 feet MSL.
(See AIRWAY.)
(Refer to AIM.)

***LOW ALTITUDE ALERT, CHECK YOUR ALTITUDE IMMEDIATELY–***
(See SAFETY ALERT.)

LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY (LAANC)– FAA and industry collaboration which automates the process of obtaining a required authorization for operations in controlled airspace.

LOW APPROACH– An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway.
(Refer to AIM.)

LOW FREQUENCY (LF)– The frequency band between 30 and 300 kHz.
(Refer to AIM.)

LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE (LPV)– A type of approach with vertical guidance (APV) based on WAAS, published on RNAV (GPS) approach charts. This procedure takes advantage of the precise lateral guidance available from WAAS. The minima is published as a decision altitude (DA).

LUAW–
(See LINE UP AND WAIT.)

# N

NAS–
(See NATIONAL AIRSPACE SYSTEM.)

NAT HLA–
(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

NATIONAL AIRSPACE SYSTEM– The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE (NBCAP)– Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR).
(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA DIGEST (NFDD)– A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Airmen, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

NATIONAL SEARCH AND RESCUE PLAN– An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

NATIONAL SECURITY AREA (NSA)–
(See SPECIAL USE AIRSPACE.)

NAVAID–
(See NAVIGATIONAL AID.)

NAVAID CLASSES– VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAIDs are:

**a.** T– Terminal.

**b.** L– Low altitude.

**c.** H– High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in the Chart Supplement.

NAVIGABLE AIRSPACE– Airspace at and above the minimum flight altitudes prescribed in the CFRs including airspace needed for safe takeoff and landing.
(Refer to 14 CFR part 91.)

NAVIGATION REFERENCE SYSTEM (NRS)– The NRS is a system of waypoints developed for use within the United States for flight planning and navigation without reference to ground based navigational aids. The NRS waypoints are located in a grid pattern along defined latitude and longitude lines. The initial use of the NRS will be in the high altitude environment. The NRS waypoints are intended for use by aircraft capable of point–to–point navigation.

NAVIGATION SPECIFICATION [ICAO]– A set of aircraft and flight crew requirements needed to support performance–based navigation operations within a defined airspace. There are two kinds of navigation specifications:

**a.** RNP specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP; e.g., RNP 4, RNP APCH.

**b.** RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

Note: The Performance–based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.

NAVIGATIONAL AID– Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

(See AIR NAVIGATION FACILITY.)

NAVSPEC-

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE–

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB–

(See NONDIRECTIONAL BEACON.)

***NEGATIVE–*** "No," or "permission not granted," or "that is not correct."

***NEGATIVE CONTACT–*** Used by pilots to inform ATC that:

**a.** Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.

**b.** They were unable to contact ATC on a particular frequency.

NFDD–

(See NATIONAL FLIGHT DATA DIGEST.)

NIGHT– The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

(See ICAO term NIGHT.)

NIGHT [ICAO]– The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

Note: Civil twilight ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

***NO GYRO APPROACH–*** A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate.

(Refer to AIM.)

***NO GYRO VECTOR–***

(See NO GYRO APPROACH.)

***NO TRANSGRESSION ZONE (NTZ)–*** The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER– Author-izes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

NONCOMMON ROUTE/PORTION– That segment of a North American Route between the inland navigation facility and a designated North American terminal.

NON–COOPERATIVE SURVEILLANCE– Any surveillance system, such as primary radar, that is not dependent upon the presence of any equipment on the aircraft or vehicle to be tracked.

(See COOPERATIVE SURVEILLANCE.)

(See RADAR.)

NONDIRECTIONAL BEACON– An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his/her bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

(See AUTOMATIC DIRECTION FINDER.)

(See COMPASS LOCATOR.)

NONMOVEMENT AREAS– Taxiways and apron (ramp) areas not under the control of air traffic.

NONPRECISION APPROACH–

(See NONPRECISION APPROACH PROCEDURE.)

NONPRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which no electronic glideslope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

NONRADAR– Precedes other terms and generally means without the use of radar, such as:

**a.** Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.

(See FINAL APPROACH COURSE.)

(See FINAL APPROACH-IFR.)

(See INSTRUMENT APPROACH PROCEDURE.)

(See RADAR APPROACH.)

**b.** Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.

(See APPROACH CONTROL FACILITY.)

(See APPROACH CONTROL SERVICE.)

**c.** Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.

(See RADAR ARRIVAL.)

(See RADAR SERVICE.)

**d.** Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.

(See RADAR ROUTE.)

**e.** Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.

(See RADAR SEPARATION.)

NON–RESTRICTIVE ROUTING (NRR)– Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground–based NAVAIDs.

NOPAC–

(See NORTH PACIFIC.)

***NORDO*** (No Radio)– Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."

(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)– The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE– A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

**a.** Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

**b.** Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

**c.** Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

**d.** Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)– The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)– That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 *North Atlantic Operations and Airspace Manual* provides detailed information on related aircraft and operational requirements.

NORTH PACIFIC– An organized route system between the Alaskan west coast and Japan.

NOT STANDARD– Varying from what is expected or published. For use in NOTAMs only.

NOT STD-
(See NOT STANDARD.)

NOTAM–
(See NOTICE TO AIRMEN.)

NOTAM [ICAO]– A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

**a.** I Distribution– Distribution by means of telecommunication.

**b.** II Distribution– Distribution by means other than telecommunications.

NOTICE TO AIRMEN (NOTAM)– A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

**a.** NOTAM (D)– A NOTAM given (in addition to local dissemination) distant dissemination beyond the area of responsibility of the Flight Service Station. These NOTAMs will be stored and available until canceled.

**b.** FDC NOTAM– A NOTAM regulatory in nature, transmitted by USNOF and given system wide dissemination.
(See ICAO term NOTAM.)

NRR–
(See NON–RESTRICTIVE ROUTING.)

NRS–
(See NAVIGATION REFERENCE SYSTEM.)

***NUMEROUS TARGETS VICINITY (LOCATION)–*** A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually.
(See TRAFFIC ADVISORIES.)

POINT–TO–POINT (PTP)– A level of NRR service for aircraft that is based on traditional waypoints in their FMSs or RNAV equipage.

POLAR TRACK STRUCTURE– A system of organized routes between Iceland and Alaska which overlie Canadian MNPS Airspace.

POSITION REPORT– A report over a known location as transmitted by an aircraft to ATC.
(Refer to AIM.)

POSITION SYMBOL– A computer-generated indication shown on a radar display to indicate the mode of tracking.

POSITIVE CONTROL– The separation of all air traffic within designated airspace by air traffic control.

POWERED-LIFT– A heavier-than-air aircraft capable of vertical takeoff, vertical landing, and low-speed flight that depends principally on engine-driven lift devices during these flight regimes and on nonrotating airfoil(s) for lift during horizontal flight. Powered-lift aircraft can operate on routes or altitudes specifically prescribed for powered-lift by the FAA.

PRACTICE INSTRUMENT APPROACH– An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

PRE–DEPARTURE CLEARANCE– An application with the Terminal Data Link System (TDLS) that provides clearance information to subscribers, through a service provider, in text to the cockpit or gate printer.

PRE–DEPARTURE REROUTE (PDRR)– A capability within the Traffic Flow Management System that enables ATC to quickly amend and execute revised departure clearances that mitigate en route constraints or balance en route traffic flows.

PREARRANGED COORDINATION– A standardized procedure which permits an air traffic controller to enter the airspace assigned to another air traffic controller without verbal coordination. The procedures are defined in a facility directive which ensures approved separation between aircraft.

PREARRANGED COORDINATION PROCEDURES– A facility's standardized procedure that describes the process by which one controller must allow an aircraft to penetrate or transit another controller's airspace in a manner that assures approved separation without individual coordination for each aircraft.

PRECIPITATION– Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

PRECISION APPROACH–
(See PRECISION APPROACH PROCEDURE.)

PRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which an electronic glideslope or other type of glidepath is provided; e.g., ILS, PAR, and GLS.
(See INSTRUMENT LANDING SYSTEM.)
(See PRECISION APPROACH RADAR.)

PRECISION APPROACH RADAR– Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope.
(See GLIDEPATH.)
(See PAR.)
(See ICAO term PRECISION APPROACH RADAR.)
(Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]– Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

PRECISION OBSTACLE FREE ZONE (POFZ)– An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM– Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents NTZ surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.

(Refer to AIM.)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)– A self–contained system used on board some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERRED IFR ROUTES– Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S., and are also available at https://www.fly.faa.gov/rmt/nfdc_preferred_routes_database.jsp. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes may be defined by DPs, SIDs, or STARs; NAVAIDs, Waypoints, etc.; high or low altitude airways; or any combinations thereof. Because they often share elements with adapted routes, pilots' use of preferred IFR routes can minimize flight plan route amendments.

(See ADAPTED ROUTES.)
(See CENTER'S AREA.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See INSTRUMENT DEPARTURE PROCEDURE.)
(See STANDARD TERMINAL ARRIVAL.)
(Refer to CHART SUPPLEMENT U.S.)

PRE-FLIGHT PILOT BRIEFING–

(See PILOT BRIEFING.)

PREVAILING VISIBILITY–

(See VISIBILITY.)

PRIMARY RADAR TARGET– An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRM–

(See AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH.)
(See PRM APPROACH.)
(See PRECISION RUNWAY MONITOR SYSTEM.)

PRM APPROACH– An instrument approach procedure titled ILS PRM, RNAV PRM, LDA PRM, or GLS PRM conducted to parallel runways separated by less than 4,300 feet and at least 3,000 feet where independent closely

spaced approaches are permitted. Use of an enhanced display with alerting, a No Transgression Zone (NTZ), secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are required for all PRM approaches. Depending on the runway spacing, the approach courses may be parallel or one approach course must be offset. PRM procedures are also used to conduct Simultaneous Offset Instrument Approach (SOIA) operations. In SOIA, one straight–in ILS PRM, RNAV PRM, GLS PRM, and one offset LDA PRM, RNAV PRM or GLS PRM approach are utilized. PRM procedures are terminated and a visual segment begins at the offset approach missed approach point where the minimum distance between the approach courses is 3000 feet. Runway spacing can be as close as 750 feet.
(Refer to AIM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN– The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.
(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]– A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.
Note 1: Procedure turns are designated “left” or “right” according to the direction of the initial turn.
Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND– That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of “procedure turn inbound” is normally used by ATC as a position report for separation purposes.
(See FINAL APPROACH COURSE.)
(See PROCEDURE TURN.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT– An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glideslope or other appropriate minimum altitude is intercepted.

PROGRESS REPORT–
(See POSITION REPORT.)

PROGRESSIVE TAXI– Precise taxi instructions given to a pilot unfamiliar with the airport or issued in stages as the aircraft proceeds along the taxi route.

PROHIBITED AREA–
(See SPECIAL USE AIRSPACE.)
(See ICAO term PROHIBITED AREA.)

PROHIBITED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

PROMINENT OBSTACLE– An obstacle that meets one or more of the following conditions:

**a.** An obstacle which stands out beyond the adjacent surface of surrounding terrain and immediately projects a noticeable hazard to aircraft in flight.

**b.** An obstacle, not characterized as low and close in, whose height is no less than 300 feet above the departure end of takeoff runway (DER) elevation, is within 10 NM from the DER, and that penetrates that airport/heliport's diverse departure obstacle clearance surface (OCS).

**c.** An obstacle beyond 10 NM from an airport/heliport that requires an obstacle departure procedure (ODP) to ensure obstacle avoidance.

(See OBSTACLE.)
(See OBSTRUCTION.)

PROPELLER (PROP) WASH (PROP BLAST)– The disturbed mass of air generated by the motion of a propeller.

PROPOSED BOUNDARY CROSSING TIME– Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

PROPOSED DEPARTURE TIME– The time that the aircraft expects to become airborne.

PROTECTED AIRSPACE– The airspace on either side of an oceanic route/track that is equal to one-half the lateral separation minimum except where reduction of protected airspace has been authorized.

PROTECTED SEGMENT- The protected segment is a segment on the amended TFM route that is to be inhibited from automatic adapted route alteration by ERAM.

PT–
(See PROCEDURE TURN.)

PTP–
(See POINT–TO–POINT.)

PTS–
(See POLAR TRACK STRUCTURE.)

PUBLIC AIRCRAFT OPERATION (PAO)– A UAS operation meeting the qualifications and conditions required for the operation of a public aircraft.

(See AC–1.1)
(See AIM)

PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT– A segment on an IAP chart annotated as "Fly Visual to Airport" or "Fly Visual." A dashed arrow will indicate the visual flight path on the profile and plan view with an associated note on the approximate heading and distance. The visual segment should be flown with flight instrumentation (when advisory lateral and vertical guidance is provided) and/or pilotage or dead reckoning navigation techniques while maintaining visual conditions.

PUBLISHED ROUTE– A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

PWS–
(See PREDICTIVE WIND SHEAR ALERT SYSTEM.)

**b.** Advanced − Required Navigation Performance (A−RNP). A navigation specification based on RNP that requires advanced functions such as scalable RNP, radius−to−fix (RF) legs, and tactical parallel offsets. This sophisticated Navigation Specification (NavSpec) is designated by the abbreviation "A−RNP".

**c.** Required Navigation Performance (RNP) Airspace. A generic term designating airspace, route(s), leg(s), operation(s), or procedure(s) where minimum required navigational performance (RNP) have been established.

**d.** Actual Navigation Performance (ANP). A measure of the current estimated navigational performance. Also referred to as Estimated Position Error (EPE).

**e.** Estimated Position Error (EPE). A measure of the current estimated navigational performance. Also referred to as Actual Navigation Performance (ANP).

**f.** Lateral Navigation (LNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

**g.** Vertical Navigation (VNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

REROUTE IMPACT ASSESSMENT (RRIA)− A capability within the Traffic Flow Management System that is used to define and evaluate a potential reroute prior to implementation, with or without miles−in−trail (MIT) restrictions. RRIA functions estimate the impact on demand (e.g., sector loads) and performance (e.g., flight delay). Using RRIA, traffic management personnel can determine whether the reroute will sufficiently reduce demand in the Flow Constraint Area and not create excessive "spill over" demand in the adjacent airspace on a specific route segment or point of interest (POI).

RESCUE COORDINATION CENTER (RCC)− A search and rescue (SAR) facility equipped and manned to coordinate and control SAR operations in an area designated by the SAR plan. The U.S. Coast Guard and the U.S. Air Force have responsibility for the operation of RCCs.

(See ICAO term RESCUE CO-ORDINATION CENTRE.)

RESCUE CO-ORDINATION CENTRE [ICAO]− A unit responsible for promoting efficient organization of search and rescue service and for coordinating the conduct of search and rescue operations within a search and rescue region.

RESOLUTION ADVISORY− A display indication given to the pilot by the Traffic alert and Collision Avoidance System (TCAS II) recommending a maneuver to increase vertical separation relative to an intruding aircraft. Positive, negative, and vertical speed limit (VSL) advisories constitute the resolution advisories. A resolution advisory is also classified as corrective or preventive.

RESTRICTED AREA−

(See SPECIAL USE AIRSPACE.)

(See ICAO term RESTRICTED AREA.)

RESTRICTED AREA [ICAO]− An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions.

***RESUME NORMAL SPEED−*** Used by ATC to advise a pilot to resume an aircraft's normal operating speed. It is issued to terminate a speed adjustment where no published speed restrictions apply. It does not delete speed restrictions in published procedures of upcoming segments of flight. This does not relieve the pilot of those speed restrictions that are applicable to 14 CFR section 91.117.

***RESUME OWN NAVIGATION−*** Used by ATC to advise a pilot to resume his/her own navigational responsibility. It is issued after completion of a radar vector or when radar contact is lost while the aircraft is being radar vectored.

(See RADAR CONTACT LOST.)

(See RADAR SERVICE TERMINATED.)

***RESUME PUBLISHED SPEED–*** Used by ATC to advise a pilot to resume published speed restrictions that are applicable to a SID, STAR, or other instrument procedure. It is issued to terminate a speed adjustment where speed restrictions are published on a charted procedure.

RHA–
(See REFINED HAZARD AREA.)

RID–
(See REMOTE IDENTIFICATION.)

RMI–
(See RADIO MAGNETIC INDICATOR.)

RNAV–
(See AREA NAVIGATION (RNAV).)

RNAV APPROACH– An instrument approach procedure which relies on aircraft area navigation equipment for navigational guidance.
(See AREA NAVIGATION (RNAV).)
(See INSTRUMENT APPROACH PROCEDURE.)

RNAV VISUAL FLIGHT PROCEDURE (RVFP)– An RVFP is a special visual flight procedure flown on an IFR flight plan. It is flown in visual conditions and clear of clouds must be maintained. An RVFP is flown using an approved RNAV system to maintain published lateral and vertical paths to runways without an instrument approach procedure. It requires an ATC clearance and may begin at other points along the path of the charted procedure when approved by ATC. An RVFP is not published in the Federal Register for public use and the operator is required to have a specific Operations Specification approval. Required ceiling and visibility minima are published on the procedure chart. An RVFP does not have a missed approach procedure and is not evaluated for obstacle protection.

ROAD RECONNAISSANCE (RC)– Military activity requiring navigation along roads, railroads, and rivers. Reconnaissance route/route segments are seldom along a straight line and normally require a lateral route width of 10 NM to 30 NM and an altitude range of 500 feet to 10,000 feet AGL.

***ROGER–*** I have received all of your last transmission. It should not be used to answer a question requiring a yes or a no answer.
(See AFFIRMATIVE.)
(See NEGATIVE.)

ROLLOUT RVR–
(See VISIBILITY.)

ROTOR WASH– A phenomenon resulting from the vertical down wash of air generated by the main rotor(s) of a helicopter.

ROTORCRAFT– A heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.

ROUND–ROBIN FLIGHT PLAN– A single flight plan filed from the departure airport to an intermediary destination(s) and then returning to the original departure airport.

ROUTE– A defined path, consisting of one or more courses in a horizontal plane, which aircraft traverse over the surface of the earth.
(See AIRWAY.)
(See JET ROUTE.)
(See PUBLISHED ROUTE.)
(See UNPUBLISHED ROUTE.)

ROUTE ACTION NOTIFICATION– EDST notification that an ADR/ADAR/AAR has been applied to the flight plan.
(See ATC PREFERRED ROUTE NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

# S

SAA–
(See SENSE AND AVOID.)
(See SPECIAL ACTIVITY AIRSPACE.)

SAFETY ALERT– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he/she is taking action to correct the situation or has the other aircraft in sight.

**a.** Terrain/Obstruction Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., "Low Altitude Alert, check your altitude immediately."

**b.** Aircraft Conflict Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., "Traffic Alert, advise you turn right heading zero niner zero or climb to eight thousand immediately."

Note: The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, he/she will take.

SAFETY LOGIC SYSTEM– A software enhancement to ASDE–3, ASDE–X, and ASSC, that predicts the path of aircraft landing and/or departing, and/or vehicular movements on runways. Visual and aural alarms are activated when the safety logic projects a potential collision. The Airport Movement Area Safety System (AMASS) is a safety logic system enhancement to the ASDE–3. The Safety Logic System for ASDE–X and ASSC is an integral part of the software program.

SAFETY LOGIC SYSTEM ALERTS–

**a.** ALERT–

**1.** An actual situation involving two real Safety Logic tracks (aircraft/aircraft, aircraft/vehicle, or aircraft/other tangible object) that the Safety Logic System has predicted will result in an imminent collision, based upon the Safety Logic parameters.

**2.** An actual situation involving a single Safety Logic track arriving to, or departing from, a closed runway.

**3.** An actual situation involving a single Safety Logic track arriving to a taxiway.

**b.** FALSE ALERT–

**1.** Alerts generated by one or more false surface radar or cooperative surveillance targets, that the ASDE system has interpreted as real tracks and placed into Safety Logic.

**2.** Alerts in which the Safety Logic System did not perform correctly, based upon the design specifications and Safety Logic parameters.

**3.** Alerts generated by surface radar targets caused by moderate or greater precipitation.

**c.** NUISANCE ALERT– An alert in which one or more of the following is true:

**1.** The alert is generated by a known situation that is not considered an unsafe operation, such as LAHSO or other approved operations.

**2.** The alert is generated by inaccurate cooperative surveillance data received by the Safety Logic System.

**3.** One or more of the aircraft involved in the alert is not intending to use a runway/taxiway (helicopter, pipeline patrol, non–Mode C overflight, etc.).

**d.** VALID NON–ALERT– A situation in which the Safety Logic System correctly determines that an alert is not required, based upon the design specifications and Safety Logic parameters.

**e.** INVALID NON−ALERT− A situation in which the Safety Logic System did not issue an alert when an alert was required, based upon the design specifications and Safety Logic parameters.

SAIL BACK− A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

SAME DIRECTION AIRCRAFT− Aircraft are operating in the same direction when:

**a.** They are following the same track in the same direction; or

**b.** Their tracks are parallel and the aircraft are flying in the same direction; or

**c.** Their tracks intersect at an angle of less than 45 degrees.

SAR−

(See SEARCH AND RESCUE.)

SATELLITE−BASED AUGMENTATION SYSTEM (SBAS) − A wide coverage augmentation system in which the user receives augmentation information from a satellite-based transmitter.

(See WIDE−AREA AUGMENTATION SYSTEM (WAAS.)

SAW−

(See AVIATION WATCH NOTIFICATION MESSAGE.)

***SAY AGAIN−*** Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after ABRAM VOR."

***SAY ALTITUDE−*** Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

***SAY HEADING−*** Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

SCHEDULED TIME OF ARRIVAL (STA)− A STA is the desired time that an aircraft should cross a certain point (landing or metering fix). It takes other traffic and airspace configuration into account. A STA time shows the results of the TBFM scheduler that has calculated an arrival time according to parameters such as optimized spacing, aircraft performance, and weather.

SE SAR−

(See SURVEILLANCE ENHANCED SEARCH AND RESCUE.)

SEA LANE− A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

SEARCH AND RESCUE− A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone.

(See FLIGHT SERVICE STATION.)
(See RESCUE COORDINATION CENTER.)
(Refer to AIM.)

SEARCH AND RESCUE FACILITY− A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station.

(See SEARCH AND RESCUE.)

SECNOT−

(See SECURITY NOTICE.)

SECONDARY RADAR TARGET– A target derived from a transponder return presented on a radar display.

SECTIONAL AERONAUTICAL CHARTS–
(See AERONAUTICAL CHART.)

SECTOR LIST DROP INTERVAL– A parameter number of minutes after the meter fix time when arrival aircraft will be deleted from the arrival sector list.

SECURITY NOTICE (SECNOT) – A SECNOT is a request originated by the Air Traffic Security Coordinator (ATSC) for an extensive communications search for aircraft involved, or suspected of being involved, in a security violation, or are considered a security risk. A SECNOT will include the aircraft identification, search area, and expiration time. The search area, as defined by the ATSC, could be a single airport, multiple airports, a radius of an airport or fix, or a route of flight. Once the expiration time has been reached, the SECNOT is considered to be canceled.

SECURITY SERVICES AIRSPACE – Areas established through the regulatory process or by NOTAM, issued by the Administrator under title 14, CFR, sections 99.7, 91.141, and 91.139, which specify that ATC security services are required; i.e., ADIZ or temporary flight rules areas.

SEE AND AVOID– When weather conditions permit, pilots operating IFR or VFR are required to observe and maneuver to avoid other aircraft. Right-of-way rules are contained in 14 CFR part 91.

SEGMENTED CIRCLE– A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.
(Refer to AIM.)

SEGMENTS OF A SID/STAR–

**a.** En Route Transition– The segment(s) of a SID/STAR that connect to/from en route flight. Not all SIDs/STARs will contain an en route transition.

**b.** En Route Transition Waypoint– The NAVAID/fix/waypoint that defines the beginning of the SID/STAR en route transition.

**c.** Common Route– The segment(s) of a SID/STAR procedure that provides a single route serving an airport/runway or multiple airports/runways. The common route may consist of a single point. Not all conventional SIDs will contain a common route.

**d.** Runway Transition– The segment(s) of a SID/STAR between the common route/point and the runway(s). Not all SIDs/STARs will contain a runway transition.

**e.** Runway Transition Waypoint (RTW)– On a STAR, the NAVAID/fix/waypoint that defines the end of the common route or en route transition and the beginning of a runway transition (In the arrival route description found on the STAR chart, the last fix of the common route and the first fix of the runway transition(s)).

SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE– An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

**a.** Initial Approach– The segment between the initial approach fix and the intermediate fix or the point where the aircraft is established on the intermediate course or final approach course.
(See ICAO term INITIAL APPROACH SEGMENT.)

**b.** Intermediate Approach– The segment between the intermediate fix or point and the final approach fix.
(See ICAO term INTERMEDIATE APPROACH SEGMENT.)

**c.** Final Approach– The segment between the final approach fix or point and the runway, airport, or missed approach point.
(See ICAO term FINAL APPROACH SEGMENT.)

**d.** Missed Approach– The segment between the missed approach point or the point of arrival at decision height and the missed approach fix at the prescribed altitude.
(Refer to 14 CFR part 97.)
(See ICAO term MISSED APPROACH PROCEDURE.)

SELF-BRIEFING– A self–briefing is a review, using automated tools, of all meteorological and aeronautical information that may influence the pilot in planning, altering, or canceling a proposed route of flight.

SENSE AND AVOID (SAA)– The capability of an unmanned aircraft to detect (sense) and avoid collisions with other aircraft and all obstacles, whether airborne or on the ground while operating in the NAS.

SEPARATION– In air traffic control, the spacing of aircraft to achieve their safe and orderly movement in flight and while landing and taking off.
(See SEPARATION MINIMA.)
(See ICAO term SEPARATION.)

SEPARATION [ICAO]– Spacing between aircraft, levels or tracks.

SEPARATION MINIMA– The minimum longitudinal, lateral, or vertical distances by which aircraft are spaced through the application of air traffic control procedures.
(See SEPARATION.)

SERVICE– A generic term that designates functions or assistance available from or rendered by air traffic control. For example, Class C service would denote the ATC services provided within a Class C airspace area.

SEVERE WEATHER AVOIDANCE PLAN (SWAP)– An approved plan to minimize the affect of severe weather on traffic flows in impacted terminal and/or ARTCC areas. A SWAP is normally implemented to provide the least disruption to the ATC system when flight through portions of airspace is difficult or impossible due to severe weather.

SEVERE WEATHER FORECAST ALERTS– Preliminary messages issued in order to alert users that a Severe Weather Watch Bulletin (WW) is being issued. These messages define areas of possible severe thunderstorms or tornado activity. The messages are unscheduled and issued as required by the Storm Prediction Center (SPC) at Norman, Oklahoma.
(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SIGMET.)

SFA–
(See SINGLE FREQUENCY APPROACH.)

SFO–
(See SIMULATED FLAMEOUT.)

SGI
(See SPECIAL GOVERNMENT INTEREST.)

SHF–
(See SUPER HIGH FREQUENCY.)

SHORT RANGE CLEARANCE– A clearance issued to a departing IFR flight which authorizes IFR flight to a specific fix short of the destination while air traffic control facilities are coordinating and obtaining the complete clearance.

SHORT TAKEOFF AND LANDING AIRCRAFT (STOL)– An aircraft which, at some weight within its approved operating weight, is capable of operating from a runway in compliance with the applicable STOL characteristics, airworthiness, operations, noise, and pollution standards.
(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

SIAP–
(See STANDARD INSTRUMENT APPROACH PROCEDURE.)

SID–
(See STANDARD INSTRUMENT DEPARTURE.)

SIDESTEP MANEUVER– A visual maneuver accomplished by a pilot at the completion of an instrument approach to permit a straight-in landing on a parallel runway not more than 1,200 feet to either side of the runway to which the instrument approach was conducted.
(Refer to AIM.)

***SIGMET–*** A weather advisory issued concerning weather significant to the safety of all aircraft. SIGMET advisories cover severe and extreme turbulence, severe icing, and widespread dust or sandstorms that reduce visibility to less than 3 miles.
(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See ICAO term SIGMET INFORMATION.)
(See SAW.)
(Refer to AIM.)

SIGMET INFORMATION [ICAO]– Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations.

***SIGNIFICANT METEOROLOGICAL INFORMATION–***
(See SIGMET.)

SIGNIFICANT POINT– A point, whether a named intersection, a NAVAID, a fix derived from a NAVAID(s), or geographical coordinate expressed in degrees of latitude and longitude, which is established for the purpose of providing separation, as a reporting point, or to delineate a route of flight.

SIMULATED FLAMEOUT– A practice approach by a jet aircraft (normally military) at idle thrust to a runway. The approach may start at a runway (high key) and may continue on a relatively high and wide downwind leg with a continuous turn to final. It terminates in landing or low approach. The purpose of this approach is to simulate a flameout.
(See FLAMEOUT.)

SIMULTANEOUS CLOSE PARALLEL APPROACHES– A simultaneous, independent approach operation permitting ILS/RNAV/GLS approaches to airports having parallel runways separated by at least 3,000 feet and less than 4,300–feet between centerlines. Aircraft are permitted to pass each other during these simultaneous operations. Integral parts of a total system are radar, NTZ monitoring with enhanced FMA color displays that include aural and visual alerts and predictive aircraft position software, communications override, ATC procedures, an Attention All Users Page (AAUP), PRM in the approach name, and appropriate ground based and airborne equipment. High update rate surveillance sensor required for certain runway or approach course separations.

SIMULTANEOUS (CONVERGING) DEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to runways or missed approach courses that intersect where required minimum spacing between the aircraft on each final approach course is required.

SIMULTANEOUS (CONVERGING) INDEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to non-parallel runways where approach procedure design maintains the required aircraft spacing throughout the approach and missed approach and hence the operations may be conducted independently.

SIMULTANEOUS ILS APPROACHES– An approach system permitting simultaneous ILS approaches to airports having parallel runways separated by at least 4,300 feet between centerlines. Integral parts of a total system are ILS, radar, communications, ATC procedures, and appropriate airborne equipment.
(See PARALLEL RUNWAYS.)
(Refer to AIM.)

SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA)– An instrument landing system comprised of an ILS PRM, RNAV PRM or GLS PRM approach to one runway and an offset LDA PRM with glideslope or an RNAV PRM or GLS PRM approach utilizing vertical guidance to another where parallel runway spaced less than 3,000 feet and at least 750 feet apart. The approach courses converge by 2.5 to 3 degrees. Simultaneous close parallel PRM approach procedures apply up to the point where the approach course separation becomes 3,000 feet, at the offset MAP. From the offset MAP to the runway threshold, visual separation by the aircraft conducting the offset approach is utilized.

(Refer to AIM)

SIMULTANEOUS (PARALLEL) DEPENDENT APPROACHES- An approach operation permitting ILS/RNAV/GLS approaches to adjacent parallel runways where prescribed diagonal spacing must be maintained. Aircraft are not permitted to pass each other during simultaneous dependent operations. Integral parts of a total system ATC procedures, and appropriate airborne and ground based equipment.

SINGLE DIRECTION ROUTES– Preferred IFR Routes which are sometimes depicted on high altitude en route charts and which are normally flown in one direction only.

(See PREFERRED IFR ROUTES.)

(Refer to CHART SUPPLEMENT U.S.)

SINGLE FREQUENCY APPROACH– A service provided under a letter of agreement to military single-piloted turbojet aircraft which permits use of a single UHF frequency during approach for landing. Pilots will not normally be required to change frequency from the beginning of the approach to touchdown except that pilots conducting an en route descent are required to change frequency when control is transferred from the air route traffic control center to the terminal facility. The abbreviation “SFA” in the DoD FLIP IFR Supplement under “Communications” indicates this service is available at an aerodrome.

SINGLE-PILOTED AIRCRAFT– A military turbojet aircraft possessing one set of flight controls, tandem cockpits, or two sets of flight controls but operated by one pilot is considered single-piloted by ATC when determining the appropriate air traffic service to be applied.

(See SINGLE FREQUENCY APPROACH.)

SKYSPOTTER– A pilot who has received specialized training in observing and reporting inflight weather phenomena.

SLASH– A radar beacon reply displayed as an elongated target.

SLDI–

(See SECTOR LIST DROP INTERVAL.)

SLOW TAXI– To taxi a float plane at low power or low RPM.

SMALL UNMANNED AIRCRAFT SYSTEM (sUAS)– An unmanned aircraft weighing less than 55 pounds on takeoff, including everything that is on board or otherwise attached to the aircraft.

SMAR–

(See SPECIAL MILITARY ACTIVITY ROUTE.)

SN–

(See SYSTEM STRATEGIC NAVIGATION.)

SPACE–BASED ADS–B (SBA)– A constellation of satellites that receives ADS–B Out broadcasts and relays that information to the appropriate surveillance facility. The currently deployed SBA system is only capable of receiving broadcasts from 1090ES–equipped aircraft, and not from those equipped with only a universal access transceiver (UAT). Also, aircraft with a top–of–fuselage–mounted transponder antenna (required for TCAS II installations) will be better received by SBA, especially at latitudes below 45 degrees.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)

SPACE LAUNCH AND REENTRY AREA– Locations where commercial space launch and/or reentry operations occur. For pilot awareness, a rocket–shaped symbol is used to depict space launch and reentry areas on sectional aeronautical charts.

***SPEAK SLOWER–*** Used in verbal communications as a request to reduce speech rate.

SPECIAL ACTIVITY AIRSPACE (SAA)– Airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon operations for national defense, homeland security, public interest, or public safety. Special activity airspace includes but is not limited to the following; Air Traffic Control Assigned Airspace (ATCAA), Altitude Reservations (ALTRV), Military Training Routes (MTR), Air Refueling Tracks and Anchors, Temporary Flight Restrictions (TFR), Special Security Instructions (SSI), etc. Special Use Airspace (SUA) is a subset of Special Activity Airspace.

(See SPECIAL USE AIRSPACE.)

SPECIAL AIR TRAFFIC RULES (SATR)– Rules that govern procedures for conducting flights in certain areas listed in 14 CFR part 93. The term "SATR" is used in the United States to describe the rules for operations in specific areas designated in the Code of Federal Regulations.

(Refer to 14 CFR part 93.)

SPECIAL EMERGENCY– A condition of air piracy or other hostile act by a person(s) aboard an aircraft which threatens the safety of the aircraft or its passengers.

SPECIAL FLIGHT RULES AREA (SFRA)– An area in the NAS, described in 14 CFR part 93, wherein the flight of aircraft is subject to special traffic rules, unless otherwise authorized by air traffic control. Not all areas listed in 14 CFR part 93 are designated SFRA, but special air traffic rules apply to all areas described in 14 CFR part 93.

SPECIAL GOVERNMENT INTEREST (SGI)– A near real-time airspace authorization for part 91 or part 107 UAS, which supports activities that answer significant and urgent governmental interests. These include: national defense, homeland security, law enforcement, and emergency operations objectives.

SPECIAL INSTRUMENT APPROACH PROCEDURE–

(See INSTRUMENT APPROACH PROCEDURE.)

SPECIAL MILITARY ACTIVITY ROUTE (SMAR)– A route, which may also be charted on the VFR Sectional Chart, that shows the extent of the airspace allocated to an associated IFR Military Training Route within which the Department of Defense conducts periodic operations involving Unmanned Aircraft Systems (UAS).

SPECIAL USE AIRSPACE– Airspace of defined dimensions identified by an area on the surface of the earth wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities. Types of special use airspace are:

**a.** Alert Area– Airspace which may contain a high volume of pilot training activities or an unusual type of aerial activity, neither of which is hazardous to aircraft. Alert Areas are depicted on aeronautical charts for the information of nonparticipating pilots. All activities within an Alert Area are conducted in accordance with Federal Aviation Regulations, and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance.

**b.** Controlled Firing Area– Airspace wherein activities are conducted under conditions so controlled as to eliminate hazards to nonparticipating aircraft and to ensure the safety of persons and property on the ground.

**c.** Military Operations Area (MOA)– Permanent and temporary MOAs are airspace established outside of Class A airspace area to separate or segregate certain nonhazardous military activities from IFR traffic and to identify for VFR traffic where these activities are conducted. Permanent MOAs are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route Low Altitude Charts.

Note: Temporary MOAs are not charted.

(Refer to AIM.)

**d.** National Security Area (NSA)– Airspace of defined vertical and lateral dimensions established at locations where there is a requirement for increased security of ground facilities. Pilots are requested to voluntarily avoid flying through the depicted NSA. When a greater level of security is required, flight through an NSA may be temporarily prohibited by establishing a TFR under the provisions of 14 CFR section 99.7. Such prohibitions will be issued by FAA Headquarters and disseminated via the U.S. NOTAM System.

(Refer to AIM)

**e.** Prohibited Area– Airspace designated under 14 CFR part 73 within which no person may operate an aircraft without the permission of the using agency.

(Refer to AIM.)

(Refer to En Route Charts.)

**f.** Restricted Area– Permanent and temporary restricted areas are airspace designated under 14 CFR part 73, within which the flight of aircraft, while not wholly prohibited, is subject to restriction. Most restricted areas are designated joint use and IFR/VFR operations in the area may be authorized by the controlling ATC facility when it is not being utilized by the using agency. Permanent restricted areas are depicted on Sectional Aeronautical, VFR Terminal Area, and applicable En Route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown.

Note: Temporary restricted areas are not charted.

(Refer to 14 CFR part 73.)

(Refer to AIM.)

**g.** Warning Area– A warning area is airspace of defined dimensions extending from 3 nautical miles outward from the coast of the United States, that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.

SPECIAL VFR CONDITIONS– Meteorological conditions that are less than those required for basic VFR flight in Class B, C, D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

(See SPECIAL VFR OPERATIONS.)

(Refer to 14 CFR part 91.)

SPECIAL VFR FLIGHT [ICAO]– A VFR flight cleared by air traffic control to operate within Class B, C, D, and E surface areas in meteorological conditions below VMC.

SPECIAL VFR OPERATIONS– Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

(See SPECIAL VFR CONDITIONS.)

(See ICAO term SPECIAL VFR FLIGHT.)

SPECIALIST–PROVIDED SERVICES–
Services delivered directly by a flight service specialist via ground/ground communication, air/ground communication, in–person, or technology (for example, speech–to–text, email, or short message service).

SPEED–

(See AIRSPEED.)

(See GROUND SPEED.)

SPEED ADJUSTMENT– An ATC procedure used to request pilots to adjust aircraft speed to a specific value for the purpose of providing desired spacing. Pilots are expected to maintain a speed of plus or minus 10 knots or 0.02 Mach number of the specified speed. Examples of speed adjustments are:

**a.** "Increase/reduce speed to Mach point (number)."

**b.** "Increase/reduce speed to (speed in knots)" or "Increase/reduce speed (number of knots) knots."

SPEED ADVISORY– Speed advisories that are generated within Time–Based Flow Management to assist controllers to meet the Scheduled Time of Arrival (STA) at the meter fix/meter arc. See also Ground–Based Interval Management–Spacing (GIM–S) Speed Advisory.

SPEED BRAKES– Moveable aerodynamic devices on aircraft that reduce airspeed during descent and landing.

SPEED SEGMENTS– Portions of the arrival route between the transition point and the vertex along the optimum flight path for which speeds and altitudes are specified. There is one set of arrival speed segments adapted from each transition point to each vertex. Each set may contain up to six segments.

SPOOFING– Denotes emissions of GNSS–like signals that may be acquired and tracked in combination with or instead of the intended signals by civil receivers. The onset of spoofing effects can be instantaneous or delayed, and effects can persist after the spoofing has ended. Spoofing can result in false and potentially confusing, or hazardously misleading, position, navigation, and/or date/time information in addition to loss of GNSS use.

***SQUAWK (Mode, Code, Function)–*** Used by ATC to instruct a pilot to activate the aircraft transponder and ADS–B Out with altitude reporting enabled, or (military) to activate only specific modes, codes, or functions. Examples: "Squawk five seven zero seven;" "Squawk three/alpha, two one zero five."

(See TRANSPONDER.)

STA–

(See SCHEDULED TIME OF ARRIVAL.)

STAGING/QUEUING– The placement, integration, and segregation of departure aircraft in designated movement areas of an airport by departure fix, EDCT, and/or restriction.

***STAND BY–*** Means the controller or pilot must pause for a few seconds, usually to attend to other duties of a higher priority. Also means to wait as in "stand by for clearance." The caller should reestablish contact if a delay is lengthy. "Stand by" is not an approval or denial.

STANDARD INSTRUMENT APPROACH PROCEDURE (SIAP)–

(See INSTRUMENT APPROACH PROCEDURE.)

STANDARD INSTRUMENT DEPARTURE (SID)– A preplanned instrument flight rule (IFR) air traffic control (ATC) departure procedure printed for pilot/controller use in graphic form to provide obstacle clearance and a transition from the terminal area to the appropriate en route structure. SIDs are primarily designed for system enhancement to expedite traffic flow and to reduce pilot/controller workload. ATC clearance must always be received prior to flying a SID.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See OBSTACLE DEPARTURE PROCEDURE.)
(Refer to AIM.)

STANDARD RATE TURN– A turn of three degrees per second.

STANDARD TERMINAL ARRIVAL (STAR)– A preplanned instrument flight rule (IFR) air traffic control arrival procedure published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STANDARD TERMINAL ARRIVAL CHARTS–

(See AERONAUTICAL CHART.)

STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM (STARS)–

(See DTAS.)

STAR–

(See STANDARD TERMINAL ARRIVAL.)

STATE AIRCRAFT– Aircraft used in military, customs and police service, in the exclusive service of any government or of any political subdivision thereof, including the government of any state, territory, or possession of the United States or the District of Columbia, but not including any government-owned aircraft engaged in carrying persons or property for commercial purposes.

STATIC RESTRICTIONS– Those restrictions that are usually not subject to change, fixed, in place, and/or published.

STATIONARY AIRSPACE RESERVATION– The term used in oceanic ATC for airspace that encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary Airspace Reservations may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

(See STATIONARY ALTITUDE RESERVATION.)

STATIONARY ALTITUDE RESERVATION (STATIONARY ALTRV)– An altitude reservation which encompasses activities in a fixed volume of airspace to be occupied for a specified time period. Stationary ALTRVs may include activities such as special tests of weapons systems or equipment; certain U.S. Navy carrier, fleet, and anti–submarine operations; rocket, missile, and drone operations; and certain aerial refueling or similar operations.

STEP TAXI– To taxi a float plane at full power or high RPM.

STEP TURN– A maneuver used to put a float plane in a planing configuration prior to entering an active sea lane for takeoff. The STEP TURN maneuver should only be used upon pilot request.

STEPDOWN FIX– A fix permitting additional descent within a segment of an instrument approach procedure by identifying a point at which a controlling obstacle has been safely overflown.

STEREO ROUTE– A routinely used route of flight established by users and ARTCCs identified by a coded name; e.g., ALPHA 2. These routes minimize flight plan handling and communications.

STNR ALT RESERVATION– An abbreviation for Stationary Altitude Reservation commonly used in NOTAMs.
(See STATIONARY ALTITUDE RESERVATION.)

STOL AIRCRAFT–
(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

***STOP ALTITUDE SQUAWK–*** Used by ATC to instruct a pilot to turn off the automatic altitude reporting feature of the aircraft transponder and ADS–B Out. It is issued when a verbally reported altitude varies by 300 feet or more from the automatic altitude report.
(See ALTITUDE READOUT.)
(See TRANSPONDER.)

STOP AND GO– A procedure wherein an aircraft will land, make a complete stop on the runway, and then commence a takeoff from that point.
(See LOW APPROACH.)
(See OPTION APPROACH.)

***STOP BURST–***
(See STOP STREAM.)

***STOP BUZZER–***
(See STOP STREAM.)

***STOP SQUAWK (Mode or Code)–*** Used by ATC to instruct a pilot to stop transponder and ADS–B transmissions, or to turn off only specified functions of the aircraft transponder (military).
(See STOP ALTITUDE SQUAWK.)
(See TRANSPONDER.)

***STOP STREAM–*** Used by ATC to request a pilot to suspend electronic attack activity.
(See JAMMING.)

STOPOVER FLIGHT PLAN– A flight plan format which permits in a single submission the filing of a sequence of flight plans through interim full-stop destinations to a final destination.

STOPWAY– An area beyond the takeoff runway no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

STRAIGHT-IN APPROACH IFR– An instrument approach wherein final approach is begun without first having executed a procedure turn, not necessarily completed with a straight-in landing or made to straight-in landing minimums.
(See LANDING MINIMUMS.)
(See STRAIGHT-IN APPROACH VFR.)
(See STRAIGHT-IN LANDING.)

STRAIGHT-IN APPROACH VFR– Entry into the traffic pattern by interception of the extended runway centerline (final approach course) without executing any other portion of the traffic pattern.
(See TRAFFIC PATTERN.)

STRAIGHT-IN LANDING– A landing made on a runway aligned within 30° of the final approach course following completion of an instrument approach.
(See STRAIGHT-IN APPROACH IFR.)

STRAIGHT-IN LANDING MINIMUMS–
(See LANDING MINIMUMS.)

STRAIGHT-IN MINIMUMS–
(See STRAIGHT-IN LANDING MINIMUMS.)

STRATEGIC PLANNING– Planning whereby solutions are sought to resolve potential conflicts.

sUAS–
(See SMALL UNMANNED AIRCRAFT SYSTEM.)

SUBSTITUTE ROUTE– A route assigned to pilots when any part of an airway or route is unusable because of NAVAID status. These routes consist of:

**a.** Substitute routes which are shown on U.S. Government charts.

**b.** Routes defined by ATC as specific NAVAID radials or courses.

**c.** Routes defined by ATC as direct to or between NAVAIDs.

SUNSET AND SUNRISE– The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned. Within Alaska, the end of evening civil twilight and the beginning of morning civil twilight, as defined for each locality.

SUPPLEMENTAL WEATHER SERVICE LOCATION– Airport facilities staffed with contract personnel who take weather observations and provide current local weather to pilots via telephone or radio. (All other services are provided by the parent FSS.)

SUPPS– Refers to ICAO Document 7030 Regional Supplementary Procedures. SUPPS contain procedures for each ICAO Region which are unique to that Region and are not covered in the worldwide provisions identified in the ICAO Air Navigation Plan. Procedures contained in Chapter 8 are based in part on those published in SUPPS.

SURFACE AREA– The airspace contained by the lateral boundary of the Class B, C, D, or E airspace designated for an airport that begins at the surface and extends upward.

SURFACE METERING PROGRAM– A capability within Terminal Flight Data Manager that provides the user with the ability to tactically manage surface traffic flows through adjusting desired minimum and maximum departure queue lengths to balance surface demand with capacity. When a demand/capacity imbalance for a surface resource is predicted, a metering procedure is recommended.

SURFACE VIEWER– A capability within the Traffic Flow Management System that provides situational awareness for a user–selected airport. The Surface Viewer displays a top–down view of an airport depicting runways, taxiways, gate areas, ramps, and buildings. The display also includes icons representing aircraft and vehicles currently on the surface, with identifying information. In addition, the display includes current airport configuration information such as departure/arrival runways and airport departure/arrival rates.

SURPIC– A description of surface vessels in the area of a Search and Rescue incident including their predicted positions and their characteristics.

(Refer to FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

SURVEILLANCE APPROACH– An instrument approach wherein the air traffic controller issues instructions, for pilot compliance, based on aircraft position in relation to the final approach course (azimuth), and the distance (range) from the end of the runway as displayed on the controller's radar scope. The controller will provide recommended altitudes on final approach if requested by the pilot.

(Refer to AIM.)

SURVEILLANCE ENHANCED SEARCH AND RESCUE (SE SAR)– An automated service used to enhance search and rescue operations that provides federal contract flight service specialists direct information from the aircraft's registered tracking device.

SUSPICIOUS UAS– Suspicious UAS operations may include operating without authorization, loitering in the vicinity of sensitive locations, (e.g., national security, law enforcement facilities, and critical infrastructure), or disrupting normal air traffic operations resulting in runway changes, ground stops, pilot evasive action, etc. The report of a UAS operation alone does not constitute suspicious activity. Development of a comprehensive list of suspicious activities is not possible due to the vast number of situations that could be considered suspicious. ATC must exercise sound judgment when identifying situations that could constitute or indicate a suspicious activity.

SWAP–

(See SEVERE WEATHER AVOIDANCE PLAN.)

SWSL–

(See SUPPLEMENTAL WEATHER SERVICE LOCATION.)

SYSTEM STRATEGIC NAVIGATION– Military activity accomplished by navigating along a preplanned route using internal aircraft systems to maintain a desired track. This activity normally requires a lateral route width of 10 NM and altitude range of 1,000 feet to 6,000 feet AGL with some route segments that permit terrain following.

ground–based air traffic surveillance sensors, typically from radar targets. TIS–B service will be available throughout the NAS where there are both adequate surveillance coverage (radar) and adequate broadcast coverage from ADS–B ground stations. Loss of TIS–B will occur when an aircraft enters an area not covered by the GBT network. If this occurs in an area with adequate surveillance coverage (radar), nearby aircraft that remain within the adequate broadcast coverage (ADS–B) area will view the first aircraft. TIS–B may continue when an aircraft enters an area with inadequate surveillance coverage (radar); nearby aircraft that remain within the adequate broadcast coverage (ADS–B) area will not view the first aircraft.

***TRAFFIC IN SIGHT–*** Used by pilots to inform a controller that previously issued traffic is in sight.
(See NEGATIVE CONTACT.)
(See TRAFFIC ADVISORIES.)

TRAFFIC MANAGEMENT INITIATIVE (TMI)– Tools used to manage demand with capacity in the National Airspace System (NAS.) TMIs can be used to manage NAS resources (e.g., airports, sectors, airspace) or to increase the efficiency of the operation. TMIs can be either tactical (i.e., short term) or strategic (i.e., long term), depending on the type of TMI and the operational need.

TRAFFIC MANAGEMENT PROGRAM ALERT– A term used in a Notice to Airmen (NOTAM) issued in conjunction with a special traffic management program to alert pilots to the existence of the program and to refer them to a special traffic management program advisory message for program details. The contraction TMPA is used in NOTAM text.

TRAFFIC MANAGEMENT UNIT– The entity in ARTCCs and designated terminals directly involved in the active management of facility traffic. Usually under the direct supervision of an assistant manager for traffic management.

***TRAFFIC NO FACTOR–*** Indicates that the traffic described in a previously issued traffic advisory is no factor.

***TRAFFIC NO LONGER OBSERVED–*** Indicates that the traffic described in a previously issued traffic advisory is no longer depicted on radar, but may still be a factor.

TRAFFIC PATTERN– The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are departure, upwind leg, crosswind leg, downwind leg, base leg, and final approach.

**a.** Upwind Leg– A flight path that begins after departure and continues straight ahead along the extended runway centerline. Upwind leg is an extension of departure and is used when issuing control instructions for separation, spacing or sequencing.

**b.** Crosswind Leg– A flight path at right angles to the landing runway off its upwind end.

**c.** Downwind Leg– A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.

**d.** Base Leg– A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

***NOTE–***
*ATC may instruct a pilot to report a "2-mile left base" to Runway 22. This instruction means that the pilot is expected to maneuver their aircraft into a left base leg that will intercept a straight-in final 2 miles from the approach end of Runway 22 and advise ATC.*

***REFERENCE–***
*Pilot's Handbook of Aeronautical Knowledge, FAA–H–8083–25, Chapter 14, Airport Operations, Traffic Patterns.*

**e.** Final Approach– A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

***NOTE–***
*ATC may instruct a pilot to report "5-mile final" to Runway 22. This instruction means that the pilot should maneuver their aircraft onto a straight-in final and advise ATC when they are five miles from the approach end of Runway 22.*

**f.** Departure– The flight path that begins after takeoff and continues straight ahead along the extended runway centerline. The departure climb continues until reaching a point at least 1/2 mile beyond the departure end of the runway and within 300 feet of the traffic pattern altitude.

***REFERENCE–***
*Pilot's Handbook of Aeronautical Knowledge, FAA–H–8083–25, Chapter 14, Airport Operations, Traffic Patterns.*

(See STRAIGHT-IN APPROACH VFR.)
(See TAXI PATTERNS.)
(See ICAO term AERODROME TRAFFIC CIRCUIT.)
(Refer to 14 CFR part 91.)
(Refer to AIM.)

TRAFFIC SITUATION DISPLAY (TSD)– TSD is a computer system that receives radar track data from all 20 CONUS ARTCCs, organizes this data into a mosaic display, and presents it on a computer screen. The display allows the traffic management coordinator multiple methods of selection and highlighting of individual aircraft or groups of aircraft. The user has the option of superimposing these aircraft positions over any number of background displays. These background options include ARTCC boundaries, any stratum of en route sector boundaries, fixes, airways, military and other special use airspace, airports, and geopolitical boundaries. By using the TSD, a coordinator can monitor any number of traffic situations or the entire systemwide traffic flows.

TRAJECTORY– A EDST representation of the path an aircraft is predicted to fly based upon a Current Plan or Trial Plan.

(See EN ROUTE DECISION SUPPORT TOOL.)

TRAJECTORY–BASED OPERATIONS (TBO)– An Air Traffic Management method for strategically planning and managing flights throughout the operation by using Time–Based Management (TBM), information exchange between air and ground systems, and the aircraft's ability to fly trajectories in time and space. Aircraft trajectory is defined in four dimensions – latitude, longitude, altitude, and time.

TRAJECTORY MODELING– The automated process of calculating a trajectory.

TRAJECTORY OPTIONS SET (TOS)– A TOS is an electronic message, submitted by the operator, that is used by the Collaborative Trajectory Options Program (CTOP) to manage the airspace captured in the traffic management program. The TOS will allow the operator to express the route and delay trade-off options that they are willing to accept.

TRANSFER OF CONTROL– That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.

(See ICAO term TRANSFER OF CONTROL.)

TRANSFER OF CONTROL [ICAO]– Transfer of responsibility for providing air traffic control service.

TRANSFERRING CONTROLLER– A controller/facility transferring control of an aircraft to another controller/facility.

(See ICAO term TRANSFERRING UNIT/CONTROLLER.)

TRANSFERRING FACILITY–

(See TRANSFERRING CONTROLLER.)

TRANSFERRING UNIT/CONTROLLER [ICAO]– Air traffic control unit/air traffic controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.

Note: See definition of accepting unit/controller.

TRANSITION– The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.

TRANSITION POINT– A point at an adapted number of miles from the vertex at which an arrival aircraft would normally commence descent from its en route altitude. This is the first fix adapted on the arrival speed segments.

TRANSITIONAL AIRSPACE– That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRANSITIONAL HAZARD AREA (THA)– Used by ATC. Airspace normally associated with an Aircraft Hazard Area within which the flight of aircraft is subject to restrictions.
(See AIRCRAFT HAZARD AREA.)
(See CONTINGENCY HAZARD AREA.)
(See REFINED HAZARD AREA.)

TRANSMISSOMETER– An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR).
(See VISIBILITY.)

***TRANSMITTING IN THE BLIND–*** A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

TRANSPONDER– The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond.
(See INTERROGATOR.)
(See ICAO term TRANSPONDER.)
(Refer to AIM.)

TRANSPONDER [ICAO]– A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

TRANSPONDER CODES–
(See CODES.)

TRANSPONDER OBSERVED – Phraseology used to inform a VFR pilot the aircraft's assigned beacon code and position have been observed. Specifically, this term conveys to a VFR pilot the transponder reply has been observed and its position correlated for transit through the designated area.

TRIAL PLAN– A proposed amendment which utilizes automation to analyze and display potential conflicts along the predicted trajectory of the selected aircraft.

TRSA–
(See TERMINAL RADAR SERVICE AREA.)

TRUST–
(See THE RECREATIONAL UAS SAFETY TEST.)

TSAS–
(See TERMINAL SEQUENCING AND SPACING.)

TSD–
(See TRAFFIC SITUATION DISPLAY.)

TURBOJET AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

TURBOPROP AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

TURBULENCE– An atmospheric phenomenon that causes changes in aircraft altitude, attitude, and or airspeed with aircraft reaction depending on intensity. Pilots report turbulence intensity according to aircraft's reaction as follows:

**a.** Light – Causes slight, erratic changes in altitude and or attitude (pitch, roll, or yaw).

**b.** Moderate– Similar to Light but of greater intensity. Changes in altitude and or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.

**c.** Severe– Causes large, abrupt changes in altitude and or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

**d.** Extreme– The aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

(See CHOP.)

(Refer to AIM.)

TURN ANTICIPATION– (maneuver anticipation).

TVOR–

(See TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION.)

TWO-WAY RADIO COMMUNICATIONS FAILURE–

(See LOST COMMUNICATIONS.)

# V

VASI–
(See VISUAL APPROACH SLOPE INDICATOR.)

VCOA–
(See VISUAL CLIMB OVER AIRPORT.)

VDP–
(See VISUAL DESCENT POINT.)

VECTOR– A heading issued to an aircraft to provide navigational guidance by radar.
(See ICAO term RADAR VECTORING.)

***VERIFY–*** Request confirmation of information; e.g., "verify assigned altitude."

***VERIFY SPECIFIC DIRECTION OF TAKEOFF (OR TURNS AFTER TAKEOFF)–*** Used by ATC to ascertain an aircraft's direction of takeoff and/or direction of turn after takeoff. It is normally used for IFR departures from an airport not having a control tower. When direct communication with the pilot is not possible, the request and information may be relayed through an FSS, dispatcher, or by other means.
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

VERTICAL NAVIGATION (VNAV)– A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

VERTICAL SEPARATION– Separation between aircraft expressed in units of vertical distance.
(See SEPARATION.)

VERTICAL TAKEOFF AND LANDING AIRCRAFT (VTOL)– Aircraft capable of vertical climbs and/or descents and of using very short runways or small areas for takeoff and landings. These aircraft include, but are not limited to, helicopters.
(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

VERTIPAD– A small, designated area, usually with a prepared surface, on a vertiport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of powered-lift aircraft.

VERTIPORT– An area of land, water, or a structure used or intended to be used to support the landing, takeoff, taxiing, parking, and storage of powered-lift aircraft or other aircraft that vertiport design and performance standards can accommodate.

VERY HIGH FREQUENCY (VHF)– The frequency band between 30 and 300 MHz. Portions of this band, 108 to 118 MHz, are used for certain NAVAIDs; 118 to 136 MHz are used for civil air/ground voice communications. Other frequencies in this band are used for purposes not related to air traffic control.

VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION–
(See VOR.)

VERY LOW FREQUENCY (VLF)– The frequency band between 3 and 30 kHz.

VFR–
(See VISUAL FLIGHT RULES.)

VFR AIRCRAFT– An aircraft conducting flight in accordance with visual flight rules.
(See VISUAL FLIGHT RULES.)

***VFR CONDITIONS–*** Weather conditions equal to or better than the minimum for flight under visual flight rules. The term may be used as an ATC clearance/instruction only when:

**a.** An IFR aircraft requests a climb/descent in VFR conditions.

**b.** The clearance will result in noise abatement benefits where part of the IFR departure route does not conform to an FAA approved noise abatement route or altitude.

**c.** A pilot has requested a practice instrument approach and is not on an IFR flight plan.

Note: All pilots receiving this authorization must comply with the VFR visibility and distance from cloud criteria in 14 CFR part 91. Use of the term does not relieve controllers of their responsibility to separate aircraft in Class B and Class C airspace or TRSAs as required by FAA Order JO 7110.65. When used as an ATC clearance/instruction, the term may be abbreviated "VFR;" e.g., "MAINTAIN VFR," "CLIMB/DESCEND VFR," etc.

VFR FLIGHT–
(See VFR AIRCRAFT.)

VFR MILITARY TRAINING ROUTES (VR)– Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training under VFR below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

***VFR NOT RECOMMENDED–*** An advisory provided by a flight service station to a pilot during a preflight or inflight weather briefing that flight under visual flight rules is not recommended. To be given when the current and/or forecast weather conditions are at or below VFR minimums. It does not abrogate the pilot's authority to make his/her own decision.

***VFR-ON-TOP–*** ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in 14 CFR and as restricted by ATC). A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes specified in 14 CFR part 91. The use of this term does not relieve controllers of their responsibility to separate aircraft in Class B and Class C airspace or TRSAs as required by FAA Order JO 7110.65.

VFR TERMINAL AREA CHARTS–
(See AERONAUTICAL CHART.)

VFR WAYPOINT–
(See WAYPOINT.)

VHF–
(See VERY HIGH FREQUENCY.)

VHF OMNIDIRECTIONAL RANGE/TACTICAL AIR NAVIGATION–
(See VORTAC.)

VIDEO MAP– An electronically displayed map on the radar display that may depict data such as airports, heliports, runway centerline extensions, hospital emergency landing areas, NAVAIDs and fixes, reporting points, airway/route centerlines, boundaries, handoff points, special use tracks, obstructions, prominent geographic features, map alignment indicators, range accuracy marks, and/or minimum vectoring altitudes.

VISIBILITY– The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet or meters.

(Refer to 14 CFR part 91.)
(Refer to AIM.)

**a.** Flight Visibility– The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.

**b.** Ground Visibility– Prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

**c.** Prevailing Visibility– The greatest horizontal visibility equaled or exceeded throughout at least half the horizon circle which need not necessarily be continuous.

**d.** Runway Visual Range (RVR)– An instrumentally derived value, based on standard calibrations, that represents the horizontal distance a pilot will see down the runway from the approach end. It is based on the sighting of either high intensity runway lights or on the visual contrast of other targets whichever yields the greater visual range. RVR, in contrast to prevailing or runway visibility, is based on what a pilot in a moving aircraft should see looking down the runway. RVR is horizontal visual range, not slant visual range. It is based on the measurement of a transmissometer made near the touchdown point of the instrument runway and is reported in hundreds of feet. RVR, where available, is used in lieu of prevailing visibility in determining minimums for a particular runway.

**1.** Touchdown RVR– The RVR visibility readout values obtained from RVR equipment serving the runway touchdown zone.

**2.** Mid-RVR– The RVR readout values obtained from RVR equipment located midfield of the runway.

**3.** Rollout RVR– The RVR readout values obtained from RVR equipment located nearest the rollout end of the runway.

(See ICAO term FLIGHT VISIBILITY.)
(See ICAO term GROUND VISIBILITY.)
(See ICAO term RUNWAY VISUAL RANGE.)
(See ICAO term VISIBILITY.)

VISIBILITY [ICAO]– The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night.

**a.** Flight Visibility– The visibility forward from the cockpit of an aircraft in flight.

**b.** Ground Visibility– The visibility at an aerodrome as reported by an accredited observer.

**c.** Runway Visual Range [RVR]– The range over which the pilot of an aircraft on the centerline of a runway can see the runway surface markings or the lights delineating the runway or identifying its centerline.

VISUAL APPROACH– An approach conducted on an instrument flight rules (IFR) flight plan which authorizes the pilot to proceed visually and clear of clouds to the airport. The pilot must, at all times, have either the airport or the preceding aircraft in sight. This approach must be authorized and under the control of the appropriate air traffic control facility. Reported weather at the airport must be: ceiling at or above 1,000 feet, and visibility of 3 miles or greater.
(See ICAO term VISUAL APPROACH.)

VISUAL APPROACH [ICAO]– An approach by an IFR flight when either part or all of an instrument approach procedure is not completed and the approach is executed in visual reference to terrain.

VISUAL APPROACH SLOPE INDICATOR (VASI)–
(See AIRPORT LIGHTING.)

VISUAL CLIMB OVER AIRPORT (VCOA)– A departure option for an IFR aircraft, operating in visual meteorological conditions equal to or greater than the specified visibility and ceiling, to visually conduct climbing turns over the airport to the published “climb–to” altitude from which to proceed with the instrument portion of the departure. VCOA procedures are developed to avoid obstacles greater than 3 statute miles from the departure end of the runway as an alternative to complying with climb gradients greater than 200 feet per nautical mile. Pilots are responsible to advise ATC as early as possible of the intent to fly the VCOA option prior to departure. These textual procedures are published in the ‘Take–Off Minimums and (Obstacle) Departure Procedures’ section of the Terminal Procedures Publications and/or appear as an option on a Graphic ODP.
(See AIM.)

VISUAL DESCENT POINT– A defined point on the final approach course of a nonprecision straight-in approach procedure from which normal descent from the MDA to the runway touchdown point may be commenced, provided the approach threshold of that runway, or approach lights, or other markings identifiable with the approach end of that runway are clearly visible to the pilot.

VISUAL FLIGHT RULES– Rules that govern the procedures for conducting flight under visual conditions. The term “VFR” is also used in the United States to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.
(See INSTRUMENT FLIGHT RULES.)
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL METEOROLOGICAL CONDITIONS.)
(Refer to 14 CFR part 91.)
(Refer to AIM.)

VISUAL HOLDING– The holding of aircraft at selected, prominent geographical fixes which can be easily recognized from the air.
(See HOLDING FIX.)

VISUAL LINE OF SIGHT (VLOS)– Condition of operations wherein the operator maintains continuous, unaided visual contact with the unmanned aircraft.

VISUAL METEOROLOGICAL CONDITIONS– Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima.
(See INSTRUMENT FLIGHT RULES.)
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL FLIGHT RULES.)

VISUAL OBSERVER (VO)– A person who is designated by the remote pilot in command to assist the remote pilot in command and the person operating the flight controls of the small UAS (sUAS) to see and avoid other air traffic or objects aloft or on the ground.

VISUAL SEGMENT–
(See PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT.)

VISUAL SEPARATION– A means employed by ATC to separate aircraft in terminal areas and en route airspace in the NAS. There are two ways to effect this separation:

**a.** The tower controller sees the aircraft involved and issues instructions, as necessary, to ensure that the aircraft avoid each other.

**b.** A pilot sees the other aircraft involved and upon instructions from the controller provides his/her own separation by maneuvering his/her aircraft as necessary to avoid it. This may involve following another aircraft or keeping it in sight until it is no longer a factor.
(See SEE AND AVOID.)
(Refer to 14 CFR part 91.)

VLF–
(See VERY LOW FREQUENCY.)

VMC–
(See VISUAL METEOROLOGICAL CONDITIONS.)

VOICE SWITCHING AND CONTROL SYSTEM (VSCS)– A computer controlled switching system that provides air traffic controllers with all voice circuits (air to ground and ground to ground) necessary for air traffic control.
(Refer to AIM.)

VOR– A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions/information to pilots.
(See NAVIGATIONAL AID.)
(Refer to AIM.)

VOR TEST SIGNAL–
(See VOT.)

VORTAC– A navigation aid providing VOR azimuth, TACAN azimuth, and TACAN distance measuring equipment (DME) at one site.
(See DISTANCE MEASURING EQUIPMENT.)
(See NAVIGATIONAL AID.)
(See TACAN.)
(See VOR.)
(Refer to AIM.)

VORTICES– Circular patterns of air created by the movement of an airfoil through the air when generating lift. As an airfoil moves through the atmosphere in sustained flight, an area of area of low pressure is created above it. The air flowing from the high pressure area to the low pressure area around and about the tips of the airfoil tends to roll up into two rapidly rotating vortices, cylindrical in shape. These vortices are the most predominant parts of aircraft wake turbulence and their rotational force is dependent upon the wing loading, gross weight, and speed of the generating aircraft. The vortices from medium to super aircraft can be of extremely high velocity and hazardous to smaller aircraft.
(See AIRCRAFT CLASSES.)
(See WAKE TURBULENCE.)
(Refer to AIM.)

VOT– A ground facility which emits a test signal to check VOR receiver accuracy. Some VOTs are available to the user while airborne, and others are limited to ground use only.
(See CHART SUPPLEMENT.)
(Refer to 14 CFR part 91.)
(Refer to AIM.)

VR–
(See VFR MILITARY TRAINING ROUTES.)

VSCS–
(See VOICE SWITCHING AND CONTROL SYSTEM.)

VTOL AIRCRAFT–
(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

# W

WA–
(See AIRMET.)
(See WEATHER ADVISORY.)

WAAS–
(See WIDE-AREA AUGMENTATION SYSTEM.)

WAKE RE–CATEGORIZATION (RECAT)– A set of optimized wake separation standards, featuring an increased number of aircraft wake categories, in use at select airports, which allows reduced wake intervals.
(See WAKE TURBULENCE.)

WAKE TURBULENCE– A phenomenon that occurs when an aircraft develops lift and forms a pair of counter–rotating vortices.
(See AIRCRAFT CLASSES.)
(See VORTICES.)
(Refer to AIM.)

WARNING AREA–
(See SPECIAL USE AIRSPACE.)

WAYPOINT– A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

WEATHER ADVISORY– In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the Aviation Surface Forecast, Aviation Cloud Forecast, or area forecast, as they affect the operation of air traffic and as prepared by the NWS.
(See AIRMET.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SIGMET.)

WEATHER RADAR PRECIPITATION INTENSITY– Existing radar systems cannot detect turbulence, however, there is a direct correlation between turbulence intensity and precipitation intensity. Controllers must issue all precipitation displayed on their user display systems. When precipitation intensity is not available, controllers will report intensity as UNKNOWN. When precipitation intensity levels are available, they will be described as follows:

**a.** LIGHT (< 26 dBZ)

**b.** MODERATE (26 to 40 dBZ)

**c.** HEAVY (> 40 to 50 dBZ)

**d.** EXTREME (> 50 dBZ)

WEATHER RECONNAISSANCE AREA (WRA)– A WRA is airspace with defined dimensions and published by Notice to Airmen, which is established to support weather reconnaissance/research flights. Air traffic control services are not provided within WRAs. Only participating weather reconnaissance/research aircraft from the 53rd Weather Reconnaissance Squadron and National Oceanic and Atmospheric Administration Aircraft Operations Center are permitted to operate within a WRA. A WRA may only be established in airspace within U.S. Flight Information Regions outside of U.S. territorial airspace.

***WHEN ABLE–***

**a.** In conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply.

**b.** In conjunction with a weather deviation clearance, requires the pilot to determine when he/she is clear of weather, then execute ATC instructions.

**c.** Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

WIDE-AREA AUGMENTATION SYSTEM (WAAS)– The WAAS is a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

WIDE AREA MULTILATERATION (WAM)– A distributed surveillance technology which may utilize any combination of signals from Air Traffic Control Radar Beacon System (ATCRBS) (Modes A and C) and Mode S transponders, and ADS-B transmissions. Multiple geographically dispersed ground sensors measure the time-of-arrival of the transponder messages. Aircraft position is determined by joint processing of the time-difference-of-arrival (TDOA) measurements computed between a reference and the ground stations' measured time-of-arrival.

***WILCO–*** I have received your message, understand it, and will comply with it.

WIND GRID DISPLAY– A display that presents the latest forecasted wind data overlaid on a map of the ARTCC area. Wind data is automatically entered and updated periodically by transmissions from the National Weather Service. Winds at specific altitudes, along with temperatures and air pressure can be viewed.

WIND SHEAR– A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

WIND SHEAR ESCAPE– An unplanned abortive maneuver initiated by the pilot in command (PIC) as a result of onboard cockpit systems. Wind shear escapes are characterized by maximum thrust climbs in the low altitude terminal environment until wind shear conditions are no longer detected.

WING TIP VORTICES–
(See VORTICES.)

***WORDS TWICE–***

**a.** As a request: "Communication is difficult. Please say every phrase twice."

**b.** As information: "Since communications are difficult, every phrase in this message will be spoken twice."

WS–
(See SIGMET.)
(See WEATHER ADVISORY.)

WST–
(See CONVECTIVE SIGMET.)
(See WEATHER ADVISORY.)

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# W

# BRIEFING GUIDE

**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**

**Initiated By: AJV−0**
**Vice President, Mission Support Services**

## Table of Contents

**1. PARAGRAPH NUMBER AND TITLE:**
1–1–9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER
1–1–10. PROCEDURAL LETTERS OF AGREEMENT (LOA)
1–1–11. CONSTRAINTS GOVERNING SUPPLEMENTS AND PROCEDURAL DEVIATIONS

**2. BACKGROUND:** Interpretation or clarification request procedures are updated in this order to reflect Air Traffic Organization (ATO), non-ATO FAA, Department of Defense, and external requestors. These procedures are being applied to FAA Order JO 7210.3, Facility Operation and Administration, in a separate change for harmonization. Paragraph 1–1–10 is updated to align with the corresponding paragraph in FAA Order 7210.3, for title and correct pointer information to develop, review and approve letters of agreement. Paragraph 1–1–11 is renamed "Waivers to This Order" to accurately reflect its content and indicate the applicable procedures in FAA Order JO 7210.3 governing waiver request and approval.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1–1–9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER** | **1–1–9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER** |
| **a**. Interpretation requests from field air traffic personnel must be submitted as follows: | **a. R**equests from **Air Traffic Services (AJT)** field personnel must be submitted **to the applicable Service Area Director of Air Traffic Operations,** as follows: |
| **1**. The request must be submitted, in writing, by an Air Traffic Facility/General manager to their Service Area Director. | **1.** The request must be submitted in writing by an Air Traffic **Manager to the District General Manager, who will forward the request in writing to the Service Area Director of Air Traffic Operations through the Operations Support Group (OSG)**. |
| **2**. The Service Area Director must review the request and determine if more than one interpretation on the intent of the language can be inferred. | **2.** The Service Area Director **of Air Traffic Operations** must review the **submission to determine if an interpretation or a clarification is required**. |
| Add | **(a) If more than one interpretation of the language can be inferred, the request for interpretation must be submitted in writing to the Director, Policy (AJV–P).** |
| Add | **(b) If it is determined a clarification of the language is required, the request is returned to the OSG. The OSG must provide a written clarification response to the requestor and forward a copy of the response to the Service Area Director of Air Traffic Operations and AJV–P.** |
| **3**. If it is determined that an interpretation is required, the Service Area Director must submit the request in writing, to the Policy Directorate for a response. | Delete |

| | |
|---|---|
| **b**. If a request does not require an interpretation but further clarification is needed it must be forwarded to the Service Center Operations Support Group for a response. | **b. Requests from System Operations Services (AJR) personnel must be submitted in writing through appropriate channels to the applicable Systems Operations Services Director. The receiving Systems Operations Services Director will review and, if deemed valid, submit the request to AJV−P for response.** |
| **1**. The Service Center Operations Support Group may consult with the Policy Directorate when preparing their response. | Delete |
| **2**. The Service Center Operations Support Group must provide a written response to the requestor and forward the response to the Policy Directorate. | Delete |
| **c**. Interpretation requests from all other sources must be submitted to the Policy Directorate at 9−AJV−P−HQ−Correspondence@faa.gov. | **c. Requests from all other FAA ATO service units, Lines of Business or Staff Offices must be submitted in writing through appropriate leadership channels to AJV−P.** |
| ***NOTE−***<br>*Interpretations can be accessed through the Air Traffic Control Interpretation link at the following website: https://my.faa.gov/org/linebusiness/ato/mission_support/psgroup/atc_interpretations.html.* | Delete |
| Add | **d. Requests from DoD personnel must be submitted in writing to the respective Military Service Headquarters, via the appropriate chain of command. The Military Service Headquarters will review and, if deemed valid, submit the request to AJV−P.** |
| Add | **e. All non-FAA/DoD requests may be submitted directly to AJV−P.** |
| Add | **f. All requests directed to AJV−P in accordance with subparagraphs a through e above must be sent to the AJV−P correspondence mailbox at: 9-AJV-P-HQ-Correspondence@faa.gov.** |
| Add | **g. Published interpretations for this order may be accessed through the MyFAA employee website via: https://my.faa.gov/org/linebusiness/ato/missionsupport/air−traffic−control−interpretations.** |

**OLD**

**1–1–10. PROCEDURAL LETTERS OF AGREEMENT (LOA)**

Procedures/minima which are applied jointly or otherwise require the cooperation or concurrence of more than one facility/organization must be documented in a letter of agreement. LOAs only supplement this order. Any minima they specify must not be less than that specified herein unless appropriate military authority has authorized application of reduced separation between military aircraft.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–1, ATC Service.*
*FAA Order JO 7210.3, Para 4–3–1, Letters of Agreement.*

**NEW**

**1–1–10. PROCEDURAL LETTERS OF AGREEMENT (LOAs)**

Procedures/minima which are applied jointly or otherwise require the cooperation or concurrence of more than one facility/organization must be documented in a letter of agreement. LOAs only supplement this order. Any minima they specify must not be less than that specified herein unless appropriate military authority has authorized application of reduced separation between military aircraft. **Procedures for LOA development, review, and approval are covered in FAA Order JO 7210.3, Chapter 4, Section 3.**

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–1, ATC Service.*

**OLD**

**1–1–11. CONSTRAINTS GOVERNING SUPPLEMENTS AND PROCEDURAL DEVIATIONS**

**a.** Exceptional or unusual requirements may dictate procedural deviations or supplementary procedures to this order. Prior to implementing supplemental or procedural deviation that alters the level, quality, or degree of service, obtain prior approval from the Vice President, Mission Support Services.

**b.** If military operations or facilities are involved, prior approval by the following appropriate headquarters is required for subsequent interface with FAA. (See TBL 1–1–3.)

**NEW**

**1–1–11. WAIVERS TO THIS ORDER**

**a.** Exceptional or unusual requirements may dictate procedural deviations or supplementary procedures to this order. **The approval of waivers to air traffic procedures is covered in FAA Order JO 7210.3, Facility Operation and Administration, Chapter 19, Section 7.**

No Change

**OLD**

***TBL 1–1–3***

**Military Operations Interface Offices**

| Branch | Address |
|---|---|
| U.S. Navy | Department of the Navy<br>Chief of Naval Operations<br>N980A, NAATSEA<br>2000 Navy Pentagon (5D453)<br>Washington, D.C. 20350–2000 |
| U.S. Air Force | HQ AFFSA<br>5316 S. Douglas Blvd<br>Bldg 8400, Room 232<br>Oklahoma City, OK 73150 |
| U.S. Army | Director<br>USAASA (MOAS–AS)<br>9325 Gunston Road, Suite N319<br>Ft. Belvoir, VA 22060–5582 |

**NEW**

***TBL 1–1–3***

**Military Operations Interface Offices**

| Department | Address |
|---|---|
| **Department of the** Navy | Department of the Navy<br>Chief of Naval Operations<br>N980A, NAATSEA<br>2000 Navy Pentagon (5D453)<br>Washington, D.C. 20350–2000 |
| **Department of the** Air Force | HQ AFFSA<br>5316 S. Douglas Blvd<br>Bldg 8400, Room 232<br>Oklahoma City, OK 73150 |
| **Department of the** Army | Director<br>USAASA (MOAS–AS)<br>9325 Gunston Road, Suite N–314<br>Ft. Belvoir, VA 22060–5582 |

***NOTE–***
*Terminal: Headquarters Air Force Flight Standards Agency is the approval authority for any USAF procedures or minima that differ from those specified herein and that involve military aircraft only.*

No Change

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–12, Military Procedures.*
*FAA Order JO 7110.65, Para 3–1–3 , Use of Active Runways.*

No Change

**1. PARAGRAPH NUMBER AND TITLE:**
2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL
2–7–3. ALTIMETER SETTINGS GREATER THAN 31.00 INCHES MERCURY

**2. BACKGROUND:** FAA Order JO 7110.65, Air Traffic Control, subparagraph 2−7−2g, Note 2, states "Flight Standards will implement high barometric pressure procedures by NOTAM defining the geographic area affected." However, the Flight Technologies and Procedures Division, Flight Procedures & Airspace Group (AFS−420), does not have procedures or guidance on monitoring barometric pressure. Historically, affected Air Route Traffic Control Centers (ARTCC) have been proactive in issuing the high barometric pressure Notice to Airmen (NOTAM). Subparagraph 2−7−2g contains information on high barometric pressure procedures that do not apply to altimeter settings related to the lowest usable flight level (FL).

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL** | **2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL** |
| **Title** through **f** ***REFERENCE*** | No Change |
| **g.** When the barometric pressure is greater than 31.00 inches Hg., issue the altimeter setting and: | Delete |
| **1.** En Route/Arrivals. Advise pilots to remain set on altimeter 31.00 until reaching final approach segment. | Delete |
| **2.** Departures. Advise pilots to set altimeter 31.00 prior to reaching any mandatory/crossing altitude or 1,500 feet AGL, whichever is lower. | Delete |
| ***PHRASEOLOGY–***<br>*ALTIMETER (setting), SET THREE ONE ZERO ZERO UNTIL REACHING THE FINAL APPROACH FIX.*<br><br>*or*<br><br>*ALTIMETER (setting), SET THREE ONE ZERO ZERO PRIOR TO REACHING (mandatory/crossing altitude or 1,500 feet AGL, whichever is lower).* | Delete |
| ***NOTE–***<br>**1.** *Aircraft with Mode C altitude reporting will be displayed on the controller's radar scope with a uniform altitude offset above the assigned altitude. With an actual altimeter of 31.28 inches Hg, the Mode C equipped aircraft will show 3,300 feet when assigned 3,000 feet. This will occur unless local directives authorize entering the altimeter setting 31.00 into the computer system regardless of the actual barometric pressure.* | Delete |
| **2.** *Flight Standards will implement high barometric pressure procedures by NOTAM defining the geographic area affected.* | Delete |

| | |
|---|---|
| **3.** *Airports unable to accurately measure barometric pressures above 31.00 inches Hg. will report the barometric pressure as "missing" or "in excess of 31.00 inches of Hg." Flight operations to or from those airports are restricted to VFR weather conditions.* | Delete |
| ***REFERENCE–***<br>*AIM, Para 7–2–2, Procedures.*<br>*FAA Order JO 7110.65, Para 3–10–1, Landing Information.* | Delete |

| OLD | NEW |
|---|---|
| Add | **2–7–3. ALTIMETER SETTINGS GREATER THAN 31.00 INCHES MERCURY** |
| Add | **When the barometric pressure is greater than 31.00 inches mercury (31" Hg), issue the altimeter setting and phraseology that high barometric pressure procedures are in effect:** |
| Add | **a. En Route/Arrivals. Advise pilots to leave altimeter set to 31.00 until reaching final approach fix.** |
| Add | ***PHRASEOLOGY–***<br>***ALTIMETER (setting) HIGH BAROMETRIC PRESSURE RESTRICTIONS IN EFFECT, SET THREE ONE ZERO ZERO UNTIL REACHING THE FINAL APPROACH FIX.*** |
| Add | **b. Departures. Advise pilots to set altimeter to 31.00 prior to reaching any mandatory/crossing altitude or 1,500 feet AGL, whichever is lower.** |
| Add | ***PHRASEOLOGY–***<br>***ALTIMETER (setting) HIGH BAROMETRIC PRESSURE RESTRICTIONS IN EFFECT, SET THREE ONE ZERO ZERO PRIOR TO REACHING (mandatory/crossing altitude or 1,500 feet AGL, whichever is lower).*** |
| Add | **c. Affected Air Route Traffic Control Centers (ARTCC) must request, via the U.S. NOTAM Office (USNOF), that a high barometric pressure NOTAM be issued for flying in regions where barometric pressure is above or forecast to be above 31" Hg.** |
| Add | ***NOTE–***<br>**1.** ***Altitude reporting transponders transmit the pressure altitude (Flight Level) of the aircraft. The altimeter setting does not directly affect the transponder reported altitude. ATC automation applies the current altimeter setting to the pressure altitude received and displays the altitude of the aircraft above mean sea level (MSL).*** |

| | |
|---|---|
| Add | ***2. With a barometric pressure of 31.30" Hg and the aircraft's altimeter set at 31.00" Hg, the Mode C transponder will transmit the actual altitude of 3,300, feet while the altimeter only shows 3,000 feet. This will occur unless local directives authorize entering the altimeter setting 31.00" Hg into the ATC automation regardless of the actual barometric pressure.*** |
| Add | ***3. Airports unable to accurately measure barometric pressures above 31.00" Hg. will report the barometric pressure as "missing" or "in excess of 31.00" Hg." Flight operations to or from those airports are restricted to VFR weather conditions.*** |

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**1. PARAGRAPH NUMBER AND TITLE:**
3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS
3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS
3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS
3–10–5. LANDING CLEARANCE

**2. BACKGROUND:** Mission Support, Policy (AJV−P), recently revised FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), and determined an update related to procedures for LAHSO was required in FAA Order JO 7110.65, Air Traffic Control, and FAA Order JO 7210.3, Facility Operation and Administration. Prior to this change, LAHSO had only been located where Simultaneous Operations on Intersecting Runways (SOIR), the predecessor to LAHSO, was provisioned in the order. The first LAHSO order in 1997 expanded SOIR to include landing operations to hold short of a taxiway and to hold short of a predetermined point on the runway. The lack of explicit guidance in FAA Order JO 7110.65 has resulted in field clarification requests on LAHSO configurations and permitted operations. This update incorporates those provisions of the LAHSO order into FAA Order JO 7110.65, while removing administrative and operational requirements required for LAHSO defined in the LAHSO order.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS** | **3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS** |
| **Title** through **g1** ***REFERENCE*** | No Change |
| **2.** During arrival operations, ensure the following: | No Change |
| **(a)** An aircraft/vehicle has completed crossing prior to the arriving aircraft crossing the landing threshold, or | **(a)** An aircraft/vehicle has completed crossing prior to **an** arriving aircraft crossing the landing threshold, or |
| ***REFERENCE–***<br>*P/CG Term – Clear of the Runway.* | No Change |
| **(b)** A crossing aircraft/vehicle will not cross the runway holding position markings until the arrival has landed and either: | **(b)** A**n** aircraft/vehicle **must** not cross the runway holding position markings until **an arriving aircraft** has **completed** land**ing roll** and: |
| **(1)** The controller has confirmed by verbal commitment from the pilot that the arriving aircraft will exit the runway prior to the point at which the crossing is intended, or | **(1) Acknowledged the instruction to** exit the runway prior to the point at which the crossing is intended, or |

| | |
|---|---|
| Add | **(2) Acknowledged the instruction to hold short of the point at which the crossing is intended, or** |
| **(2)** The controller visually observes the aircraft exiting the runway prior to the point at which the crossing is intended, or | **(3) V**isually observe**d** exiting the runway prior to the point at which the crossing is intended, or |
| **(3)** The arriving aircraft has passed the point at which the crossing is intended. | **(4) P**assed the point at which the crossing is intended. |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 3−10−4, Intersecting Runway/Intersecting Flight Path Separation.*<br>*FAA Order JO 7210.3, Para 10−3−7, Land and Hold Short Operations (LAHSO).* | Delete |
| Add | **3. LAHSO application: When the arriving aircraft has acknowledged a clearance to land and hold short in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), an aircraft/vehicle may cross the runway beyond the arriving aircraft's hold short point. The crossing aircraft/vehicle must be informed the landing traffic will hold short of the intersection.** |
| Add | ***PHRASEOLOGY–***<br>***(crossing instructions) LANDING TRAFFIC WILL HOLD SHORT OF THE INTERSECTION.*** |
| Add | ***EXAMPLE–***<br>***"United Forty-Eight, Cross Runway Seven Left at taxiway Whiskey, landing traffic will hold short of the intersection."*** |
| Add | ***REFERENCE–***<br>***FAA Order JO 7110.65, Para 3−10−5, Landing Clearance.*** |

| **OLD** | **NEW** |
|---|---|
| **3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS** | **3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS** |
| **Title** through **b2(a)** | No Change |
| **(b)** Has completed the landing roll on the runway and will hold short of the intersection, or | **(b)** Has completed landing roll and **acknowledged the instruction to** hold short of the intersection, or |
| **(c)** Has landed and will hold short of an intersecting runway, intersecting taxiway, intersecting approach/departure flight path, or other predetermined point in accordance with the Land and Hold Short Operations (LAHSO) directive, or | **(c)** Has **completed landing roll and acknowledged the instruction to exit the runway prior to intersection**, or |
| **(d)** Has completed the landing roll and is observed turning at an exit point prior to the intersection, or | **(d)** Has completed landing roll and is observed turning at an exit point prior to the intersection, or |
| **(e)** Has passed the intersection. | No Change |

| | |
|---|---|
| ***REFERENCE–***<br>*FAA Order 7110.118, Land and Hold Short Operations (LAHSO).*<br>*P/CG Term– Clear of the Runway.*<br>*P/CG Term – Landing Roll.* | ***REFERENCE–***<br>*P/CG Term – Clear of the Runway.*<br>*P/CG Term – Landing Roll.* |
| ***FIG 3–9–10*** | No Change |
| Add | **3. *USA/USAF/USN NOT APPLICABLE*. An arriving aircraft has acknowledged a clearance to land and hold short of the intersecting runway/intersecting flight path being used by a departing aircraft in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO). (See FIG 3–9–11.)** |
| Add | ***REFERENCE–***<br>***FAA Order JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting Flight Path Separation.*** |

**OLD**

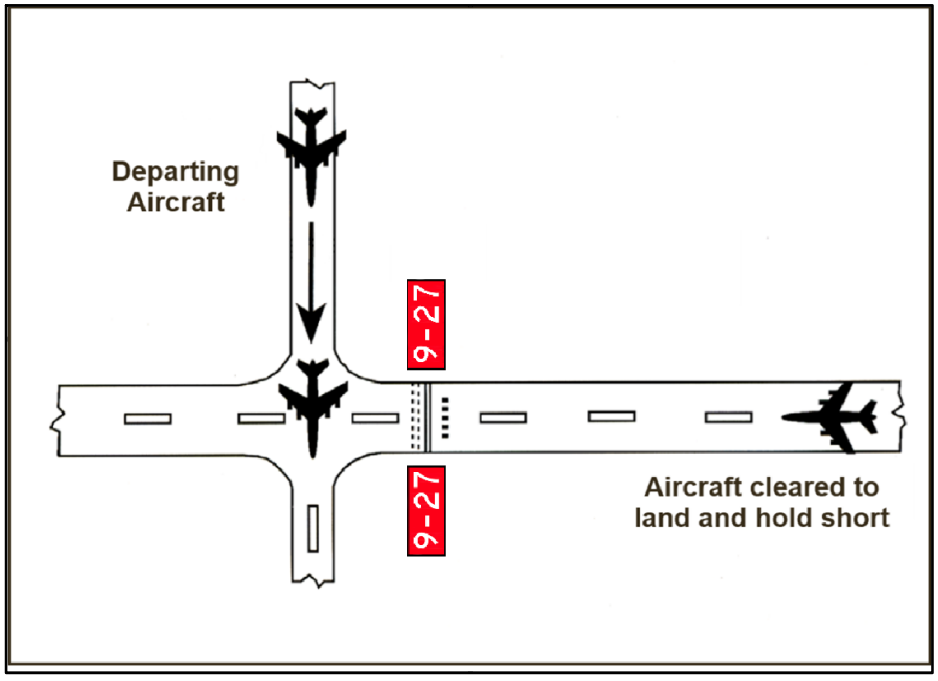
Add

Add

**NEW**

***FIG 3–9–11***

**Intersecting Runway Separation**




| | |
|---|---|
| **WAKE TURBULENCE APPLICATION** | No Change |
| **b3** through **b4** | Renumber **b4** through **b5** |

| **OLD** | **NEW** |
|---|---|
| **3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS** | **3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS** |
| **Title** through **FIG 3–10–9** ***REFERENCE*** | No Change |

**b.** "USA/USAF/USN NOT APPLICABLE." An arriving aircraft may be authorized to land and hold short of an intersecting runway, an intersecting taxiway, an intersecting approach/departure flight path, or other predetermined point in accordance with procedures specified in the LAHSO directive. The following conditions apply:

***NOTE–***
*Application of these procedures does not relieve controllers from the responsibility of providing other appropriate separation contained in this order.*

***REFERENCE–***
*FAA Order 7110.118, Land and Hold Short Operations (LAHSO).*
*FAA Order JO 7210.3, Para 10–3–7, Land and Hold Short Operations (LAHSO).*

**1.** A simultaneous takeoff and landing operation must only be conducted in VFR conditions.

**2.** Instruct the landing aircraft to hold short of the intersecting runway being used by the aircraft taking off. In the case of simultaneous landings and no operational benefit is lost, restrict the aircraft of the lesser weight category (if known). LAHSO clearances must only be issued to aircraft that are listed in the current LAHSO directive, whose Available Landing Distance (ALD) does not exceed the landing distance requirement for the runway condition.

***PHRASEOLOGY–***
*HOLD SHORT OF RUNWAY (runway number), (traffic, type aircraft or other information).*

***NOTE–***
*Pilots who prefer to use the full length of the runway or a runway different from that specified are expected to advise ATC prior to landing.*

Add

**b.** ***USA/USAF/USN NOT APPLICABLE.*** An arriving aircraft may be authorized to land and hold short of **the intersecting runway/intersecting flight path being used by another departing or arriving aircraft** in accordance with **FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO)**. The following **procedures** apply:

No Change

Delete

Delete

**1.** Instruct the **arriving** aircraft to **land and** hold short of the intersecting runway/**intersecting flight path**. In the case of simultaneous landings and no operational benefit is lost, restrict the aircraft of the lesser weight category (if known). **(See FIG 3–10–10 and FIG 3–10–11.)**

Delete

***NOTE–***
***The hold short point issued to an arriving aircraft may or may not be the intersecting runway or approach/departure flight path of the other runway. The hold short point may be a taxiway or other predetermined point on the runway that protects the intersecting runway/intersecting flight path.***

***REFERENCE–***
***FAA Order JO 7110.65, Para 3–10–5, Landing Clearance.***

**OLD**

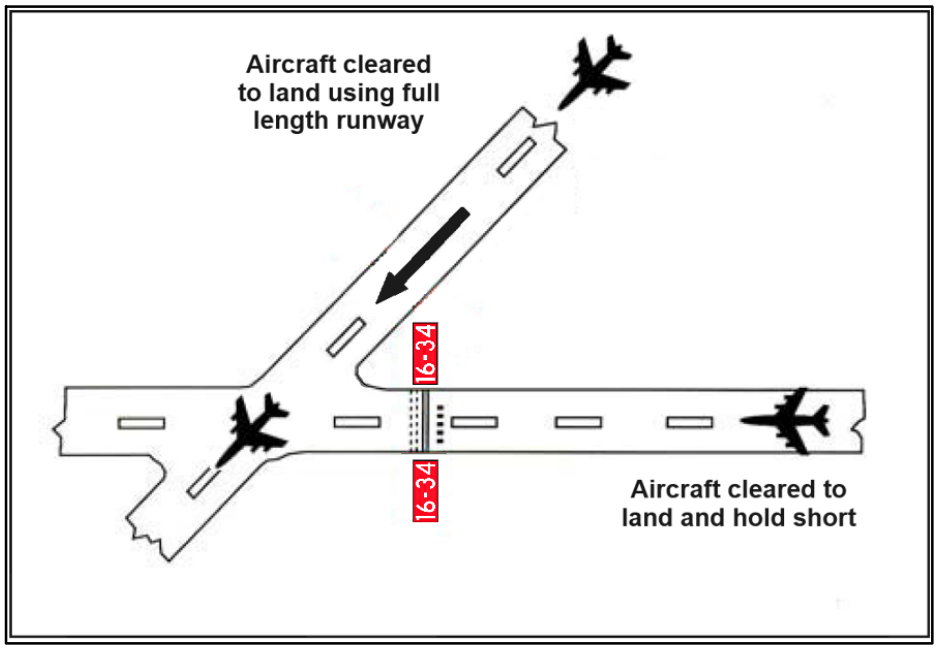
Add

Add

**NEW**

*FIG 3–10–10*

**Intersecting Runway Separation**




**3.** Issue traffic information to both aircraft involved and obtain an acknowledgment from each. Request a read back of hold short instructions when they are not received from the pilot of the restricted aircraft.

***EXAMPLE–***

**1.** *"Runway one eight cleared to land, hold short of runway one four left, traffic, (type aircraft) landing runway one four left."*

*(When pilot of restricted aircraft responds with only acknowledgment):*

*"Runway one four left cleared to land, traffic, (type aircraft) landing runway one eight will hold short of the intersection."*

*"Read back hold short instructions."*

**2.** *"Runway three six cleared to land, hold short of runway three three, traffic, (type aircraft) departing runway three three."*

*"Traffic, (type aircraft) landing runway three six will hold short of the intersection, runway three three cleared for takeoff."*

**2.** Issue traffic information to both aircraft involved and obtain an acknowledgment from each.

***EXAMPLE–***

**1.** *"Runway one eight cleared to land, hold short of runway one four left, traffic, (type aircraft) landing runway one four left."*

*"Runway one four left cleared to land, traffic, (type aircraft) landing runway one eight will hold short of the intersection."*

No Change

| | |
|---|---|
| **4**. Issue the measured distance from the landing threshold to the hold short point rounded "down" to the nearest 50-foot increment if requested by either aircraft. | Delete |
| ***EXAMPLE–***<br>*"Five thousand fifty feet available."* | Delete |
| **5.** The conditions in subparagraphs b2, 3, and 4 must be met in sufficient time for the pilots to take other action, if desired, and no later than the time landing clearance is issued. | **3.** The conditions in subparagraphs **b1 and b2 above** must be met in sufficient time to take other action, if desired **by the pilot(s)**, and no later than the time landing clearance is issued. |
| **6**. Land and Hold Short runways must be free of any contamination as described in the current LAHSO directive, with no reports that braking action is less than good. | Delete |
| **7**. There is no tailwind for the landing aircraft restricted to hold short of the intersection. The wind may be described as "calm" when appropriate. | Delete |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 2–6–3, Reporting Weather Conditions.* | Delete |
| **8.** The aircraft required landing distances are listed in the current LAHSO directive. | Delete |
| **9.** STOL aircraft operations are in accordance with a letter of agreement with the aircraft operator/pilot or the pilot confirms that it is a STOL aircraft. | Delete |

| **OLD** | **NEW** |
|---|---|
| **3–10–5. LANDING CLEARANCE** | **3–10–5. LANDING CLEARANCE** |
| **a.** When issuing a clearance to land, first state the runway number followed by the landing clearance. If the landing runway is changed, controllers must preface the landing clearance with "Change to runway" followed by the runway number. Controllers must then restate the runway number followed by the landing clearance. | **a.** When issuing a clearance to land, first state the runway number followed by the landing clearance. |
| ***PHRASEOLOGY–***<br>*RUNWAY (number) CLEARED TO LAND.* | ***PHRASEOLOGY–***<br>*RUNWAY (number) CLEARED TO LAND.* |
| *Or* | |
| *CHANGE TO RUNWAY (number, RUNWAY (number) CLEARED TO LAND.* | |
| ***NOTE–***<br>*The purpose of the "change to runway" phraseology and restating the runway number is to emphasize to the pilot that they are being cleared to land on a runway other than what they were expecting.* | Delete |

| | |
|---|---|
| Add | **b.** ***USA/USAF/USN NOT APPLICABLE*****. When issuing a clearance to land and hold short in accordance with FAA Order JO 7110.118, Land and Hold Short Operations (LAHSO), exchange traffic information as necessary. Request a read back of hold short instructions when not received.** |
| Add | ***NOTE–*** **1.** ***Pilots who prefer to use the full length of the runway or a runway different from that specified are expected to advise ATC prior to landing.*** |
| Add | **2.** ***Pilots may not be able to accept a LAHSO clearance when their aircraft is less than 1,000 feet AGL.*** |
| Add | ***PHRASEOLOGY–***<br>***RUNWAY (number) CLEARED TO LAND, HOLD SHORT OF RUNWAY (number)/TAXIWAY (taxiway)/(approach/departure path)/POINT (predetermined point), (traffic, type aircraft, or other information).***<br><br>***Or***<br><br>***READ BACK HOLD SHORT INSTRUCTIONS.*** |
| Add | ***EXAMPLE–***<br>**1.** ***"Runway 7 Left, cleared to land, hold short of taxiway Whiskey, traffic crossing downfield."***<br><br>***Or (if hold short instructions are not read back with the landing clearance)***<br><br>***"Read back hold short instructions."*** |
| Add | **2.** ***"Runway one eight cleared to land, hold short of runway one four left, traffic, (type aircraft) landing runway one four left."*** |
| Add | **3.** ***"Runway one six cleared to land, hold short of runway seven left, traffic, (type aircraft) departing runway seven left."*** |
| Add | **c. If the landing runway is changed, preface the landing clearance with "change to runway" followed by the runway number. Restate the runway number followed by the landing clearance.** |
| Add | ***PHRASEOLOGY–***<br>***CHANGE TO RUNWAY (number), RUNWAY (number) CLEARED TO LAND.*** |
| Add | ***NOTE–***<br>***The purpose of the "change to runway" phraseology and restating the runway number is to emphasize to the pilot that they are being cleared to land on a runway other than what they were expecting.*** |
| **b** through **g** | Re–letter **d** through **i** |

**1. PARAGRAPH NUMBER AND TITLE:** 3–10–3. SAME RUNWAY SEPARATION

**2. BACKGROUND:** As of May 25, 2024, all terminal facilities within the National Airspace System (NAS) are complying with FAA Order JO 7110.126, Consolidated Wake Turbulence (CWT). This order now supersedes multiple paragraphs in FAA Order JO 7110.65, Air Traffic Control, including paragraph 3–10–3, which is expected to be updated in 2025 to incorporate the contents of JO 7110.126. Under CWT, wake turbulence advisories are only required when the preceding aircraft is a Category A, B, C, D, or E aircraft (see FAA Order JO 7110.126, pg. B–9). Paragraph 3–10–3 of FAA Order JO 7110.65 provides three examples of these advisories. The first two examples reference a Category B and Category E aircraft, respectively. However, the third example currently refers to a Boeing 737, which is a Category F aircraft. Air traffic controllers may elect to issue cautionary information to any pilot if in their judgement wake turbulence may have an adverse effect on their aircraft (see JO 7110.65, subparagraph 2–1–20b). The examples in paragraph 3–10–3 should align with the text presented.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **3–10–3. SAME RUNWAY SEPARATION** | **3–10–3. SAME RUNWAY SEPARATION** |
| **Title** through **b1** | No Change |
| **2.** The B757/large aircraft to a small aircraft landing behind a departing/arriving B757/large aircraft on the same or parallel runways separated by less than 2,500 feet. | No Change |
| ***REFERENCE–***<br>*AC 90–23, Aircraft Wake Turbulence, Para 12, Pilot Responsibility.*<br>*FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.* | No Change |
| ***EXAMPLE–***<br>**1. "***Runway two seven left cleared to land, caution wake turbulence, heavy Boeing 747 departing runway two seven right."* | No Change |
| **2.** *"Number two follow Boeing 757 on 2-mile final. Caution wake turbulence."* | No Change |
| **3.** *"Traffic, Boeing 737 on 2–mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."* | **3.** *"Traffic,* ***heavy Airbus 310*** *on 2-mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."* |

**1. PARAGRAPH NUMBER AND TITLE:** 4–8–1. APPROACH CLEARANCE

**2. BACKGROUND:** The Pilot Controller Procedures System Integration (PCPSI) sub-workgroup of the Performance Based Operations Aviation Rulemaking Committee (PARC) recommended to the FAA that a change be made to provide guidance to pilots when operating on a Standard Terminal Arrival Route (STAR) or Air Traffic Service (ATS) route that directly connects to an Instrument Approach Procedure (IAP) at an initial approach fix (IAF) or an intermediate fix (IF), and will be used, so that flight crews are prepared in a timely manner with navigation database connections.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4–8–1. APPROACH CLEARANCE** | **4–8–1. APPROACH CLEARANCE** |
| **Title** through **a** | No Change |
| **1.** To require an aircraft to execute a particular instrument approach procedure, specify in the approach clearance the name of the approach as published on the approach chart. Where more than one procedure is published on a single chart and a specific procedure is to be flown, amend the approach clearance to specify execution of the specific approach to be flown. If only one instrument approach of a particular type is published, the approach needs not be identified by the runway reference. | **1. To authorize a pilot to execute a particular instrument approach procedure:** |
| Add | **(a) Specify the name of the approach as published on the approach chart.** |
| Add | **(b) Where more than one procedure is published on a single chart and a specific procedure is to be flown, specify the approach to be flown.** |
| Add | **(c) If only one instrument approach of a particular type is published, the approach need not be identified by the runway reference.** |
| **2.** An aircraft conducting an ILS or LDA approach must be advised at the time an approach clearance is issued when the glideslope is reported out of service, unless the title of the published approach procedure allows (for example, ILS or LOC Rwy 05). | No Change |
| **3.** Standard instrument approach procedures (SIAP) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF. | **3. I**nstrument approach procedures (IAP**s**) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF. |
| Add | **4. Where a STAR/ATS route and an IAP connect at an IAF or IF, and the connection will be used, clear the aircraft for approach at least 3 NM prior to the IAF/IF and specify the name of the connection fix. For arrivals via an ATS Route, assign an altitude to maintain until the connection fix.** |
| Add | ***NOTE–***<br>***STARs are not ATS routes.*** |
| Add | ***REFERENCE–***<br>***P/CG Term – Air Traffic Service (ATS) Routes.*** |
| Add | ***EXAMPLE–***<br>***"At RDFSH, Cleared ILS Runway 27 Approach."***<br>***"At TNTOE, Cleared RNAV Z Runway 3 Approach."***<br>***"Cross AMONT at or above 9,000, Cleared ILS Runway 30R Approach."*** |

**a4** through **a5**

**6.** Controllers must not disapprove a pilot request to cold temperature compensate in conjunction with the issuance of an approach clearance.

***PHRASEOLOGY–***
*CLEARED (type) APPROACH.*

*CLEARED APPROACH.*

*(To authorize a pilot to execute his/her choice of instrument approach),*

*CLEARED (specific procedure to be flown) APPROACH.*

*(Where more than one procedure is published on a single chart and a specific procedure is to be flown),*

*CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.*

*(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)*

*CLEARED LOCALIZER APPROACH*

*(When the title of the approach procedure contains "or LOC")*

*CANCEL APPROACH CLEARANCE (additional instructions as necessary)*

*(When it is necessary to cancel a previously issued approach clearance)*

***EXAMPLE–***
*"Cleared Approach."*
*"Cleared (V–O–R/I–L–S/Localizer) Approach."*
*"Cleared L–D–A Runway Three-Six Approach."*
*"Cleared Localizer Back Course Runway One-Three Approach."*
*"Cleared (GPS/RNAV Z) Runway Two-Two Approach."*
*"Cleared BRANCH ONE Arrival and (ILS/RNAV) Runway One-Three Approach."*
*"Cleared I–L–S Runway Three-Six Approach, glideslope unusable."*
*"Cleared S–D–F Approach."*
*"Cleared G–L–S Approach."*

Renumber **a5** through **a6**

**7.** Controllers must not disapprove a pilot request to cold temperature compensate in conjunction with the issuance of an approach clearance.

***PHRASEOLOGY–***
*CLEARED (type) APPROACH.*

*CLEARED APPROACH.*

*(To authorize a pilot to execute his/her choice of instrument approach),*

*CLEARED (specific procedure to be flown) APPROACH.*

*(Where more than one procedure is published on a single chart and a specific procedure is to be flown),*

**At *(fix), CLEARED (specific procedure to be flown) APPROACH.***

***(To issue an approach clearance when a STAR/ATS route and IAP are directly connected),***

*CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.*

*(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)*

*CLEARED LOCALIZER APPROACH*

*(When the title of the approach procedure contains "or LOC")*

*CANCEL APPROACH CLEARANCE (additional instructions as necessary)*

*(When it is necessary to cancel a previously issued approach clearance)*

***EXAMPLE–***
*"Cleared Approach."*
*"Cleared (V–O–R/I–L–S/Localizer) Approach."*
*"Cleared L–D–A Runway Three-Six Approach."*
*"Cleared Localizer Back Course Runway One-Three Approach."*
*"Cleared RNAV Z Runway Two-Two Approach."*
*"Cleared BRANCH ONE Arrival and (ILS/RNAV) Runway One-Three Approach."*
*"Cleared I–L–S Runway Three-Six Approach, glideslope unusable."*
*"Cleared S–D–F Approach."*
*"Cleared G–L–S Approach."*

| | |
|---|---|
| ***NOTE–*** | No Change |
| **1.** *Clearances authorizing instrument approaches are issued on the basis that, if visual contact with the ground is made before the approach is completed, the entire approach procedure will be followed unless the pilot receives approval for a contact approach, is cleared for a visual approach, or cancels their IFR flight plan.* | |
| **2.** *Approach clearances are issued based on known traffic. The receipt of an approach clearance does not relieve the pilot of his/her responsibility to comply with applicable Parts of Title 14 of the Code of Federal Regulations and the notations on instrument approach charts which levy on the pilot the responsibility to comply with or act on an instruction; for example, "Straight–in minima not authorized at night," "Procedure not authorized when glideslope/glidepath not used," "Use of procedure limited to aircraft authorized to use airport," or "Procedure not authorized at night" or Snowflake icon with associated temperature.* | No Change |
| **3.** *In some cases, the name of the approach, as published, is used to identify the approach, even though a component of the approach aid, other than the localizer on an ILS is inoperative.* | No Change |
| **4.** *Where more than one procedure to the same runway is published on a single chart, each must adhere to all final approach guidance contained on that chart, even though each procedure will be treated as a separate entity when authorized by ATC.* | No Change |
| **5.** *The use of alphabetical identifiers in the approach name with a letter from the end of the alphabet; for example, X, Y, Z, such as "HI TACAN Z Rwy 6L or RNAV(GPS) Y Rwy 04", denotes multiple straight–in approaches to the same runway that use the same approach aid.* | No Change |
| **6.** *Alphabetical suffixes with a letter from the beginning of the alphabet; for example, A, B, C, denote a procedure that does not meet the criteria for straight–in landing minimums authorization.* | No Change |
| **7.** *14 CFR section 91.175(j) requires a pilot to receive a clearance to conduct a procedure turn when vectored to a final approach course or fix, conducting a timed approach, or when the procedure specifies "NO PT."* | No Change |

| | |
|---|---|
| **8.** *An aircraft which has been cleared to a holding fix and prior to reaching that fix is issued a clearance for an approach, but not issued a revised routing; that is, "proceed direct to...." may be expected to proceed via the last assigned route, a feeder route (if one is published on the approach chart), and then to commence the approach as published. If, by following the route of flight to the holding fix, the aircraft would overfly an IAF or the fix associated\ with the beginning of a feeder route to be used, the aircraft is expected to commence the approach using the published feeder route to the IAF or from the IAF as appropriate; that is, the aircraft would not be expected to overfly and return to the IAF or feeder route.* | No Change |
| **9.** *Approach name items contained within parenthesis; for example, RNAV (GPS) Rwy 04, are not included in approach clearance phraseology.* | No Change |
| **10.** *Pilots are required to advise ATC when intending to apply cold temperature compensation to instrument approach segments. Pilots must advise ATC of the amount of compensation required for each affected segment on initial contact or as soon as possible. Pilots are not required to advise ATC when correcting on the final segment only. Controllers may delay the issuance of an approach clearance to comply with approved separation requirements when informed that a pilot will apply cold temperature compensation (CTC). Pilots will not apply altitude compensation, unless authorized, when assigned an altitude prior to an approach clearance. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible. This eliminates pilots having to climb once on the approach.* | No Change |
| ***REFERENCE–***<br>*FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).*<br>*P/CG Term – Cold Temperature Compensation.*<br>*AIM, Para 5–1–17, Cold Temperature Operations.*<br>*AIM, Para 5–5–4, Instrument Approach.* | No Change |
| **11.** *There are some systems, for example, Enhanced Flight Vision System (EFVS), which allow pilots to conduct Instrument Approach Procedures (IAP) when the reported weather is below minimums prescribed on the IAP to be flown.* | No Change |
| ***REFERENCE–***<br>*14 CFR § 91.175(l).*<br>*P/CG Term – EFVS.* | No Change |
| **b** through ***FIG 4–8–5 NOTE 2*** | No Change |
| **j.** Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under subparagraph b above. (See FIG 4–8–6.) | **j.** Where a terminal arrival area (TAA) has been established to support **instrument** approaches, use the procedures under subparagraph b above. (See FIG 4–8–6 **and FIG 4–8–7**.) |

***NOTE–***
**1.** *Aircraft that are within the lateral boundary of a TAA, and at or above the TAA minimum altitude, are established on the approach and may be issued an approach clearance without an altitude restriction.*

No Change

**2.** *The TAA minimum altitude may be higher than the MVA/MIA. If an aircraft is below the TAA minimum altitude, it must either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.*

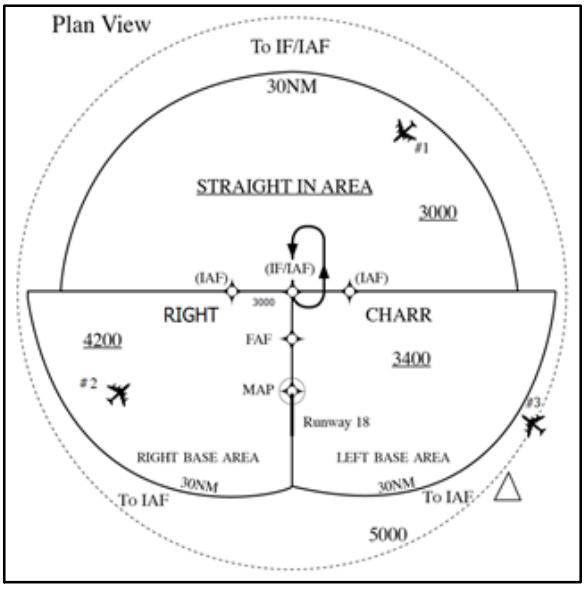
No Change

***EXAMPLE–***
*Aircraft 1:The aircraft is at or above the minimum TAA altitude and within the lateral boundary of the TAA. "Cleared R–NAV Runway One Eight Approach."*
*Aircraft 2: The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. "Cross RIGHT at or above three thousand, cleared R–NAV Runway One Eight Approach."*
*Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One-Eight Approach."*

No Change

**OLD**

***FIG 4–8–6***
**Basic "T" and TAA Design**




Add

Add

**NEW**

*FIG 4–8–6*
**Basic "T" and TAA Design**

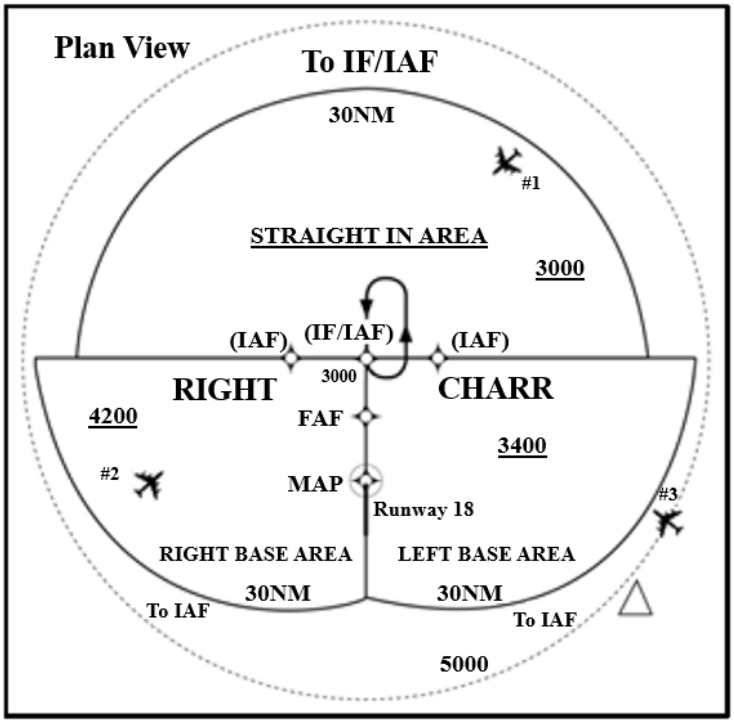
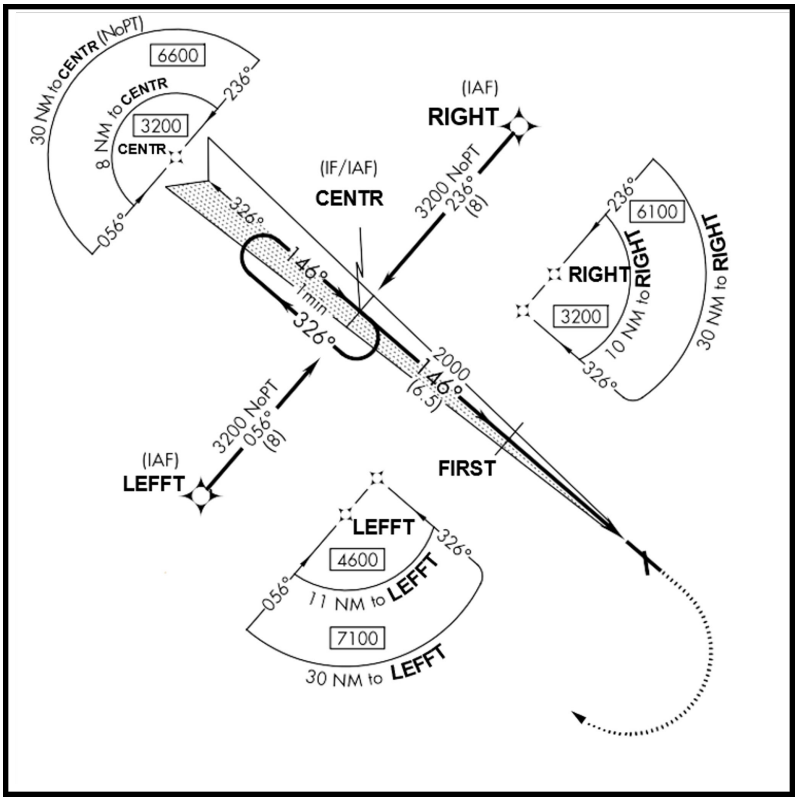


*FIG 4–8–7*

**Intersecting Runway Separation**

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**1. PARAGRAPH NUMBER AND TITLE:** 4–8–9. MISSED APPROACH

**2. BACKGROUND:** Paragraph 4–8–9, Missed Approach, Note 1, provided a requirement for specific instructions to be included when instructing a pilot to conduct an alternate missed approach. As notes are to be nonregulatory in nature, this change relocates the requirement into the body of the paragraph in addition to using a subparagraph structure for increased clarity. References to the associated Aeronautical Information Manual (AIM) paragraphs and applicable Flight Standards order are revised.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4–8–9. MISSED APPROACH** | **4–8–9. MISSED APPROACH** |
| Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automatically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. An alternate missed approach procedure as published on the appropriate FAA Form 8260 or appropriate military form may be assigned when necessary. After an aircraft commences a missed approach, it may be vectored at or above the MVA/MIA, or follow the provisions of paragraph 5–6–3, Vectors Below Minimum Altitude. | Delete |

| | |
|---|---|
| Add | **a. Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automatically authorizes the aircraft to execute the missed approach procedure depicted for the IAP being flown.** |
| Add | **b. If assignment of the alternate missed approach procedure is necessary, the controller must issue the description as published on the appropriate FAA Form 8260 or military form for the IAP.** |
| Add | **c. If the alternate missed approach procedure is published and in effect via NOTAM, the procedure description need not be issued to the pilot.** |
| Add | **d. After an aircraft commences a missed approach, it may be vectored at or above the MVA/MIA or follow the provisions of paragraph 5–6–3, Vectors Below Minimum Altitude.** |
| ***NOTE–***<br>**1.** *Alternate missed approach procedures are published on the appropriate FAA Form 8260 or appropriate military form and require a detailed clearance when they are issued to the pilot.* | Delete |
| **2.** *In the event of a missed approach involving a turn, unless otherwise cleared, the pilot will proceed to the missed approach point before starting that turn.* | ***NOTE–***<br>**1.** *In the event of a missed approach involving a turn, unless otherwise cleared, the pilot will proceed to the missed approach point before starting that turn.* |
| **3.** *Pilots must advise ATC when intending to apply cold temperature compensation and of the amount of compensation required. Pilots will not apply altitude compensation, unless authorized, when assigned an altitude if provided an initial heading to fly or radar vectors in lieu of published missed approach procedures. Consider ation should be given to vectoring aircraft at or above the requested compensating altitude if possible.* | **2.** *Pilots must advise ATC when intending to apply cold temperature compensation and of the amount of compensation required. Pilots will not apply altitude compensation, unless authorized, when assigned an altitude if provided an initial heading to fly or radar vectors in lieu of published missed approach procedures. Consider ation should be given to vectoring aircraft at or above the requested compensating altitude if possible.* |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 4–8–11, Practice Approaches.*<br>*FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.*<br>*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*<br>*FAA Order 8260.19, Flight Procedures and Airspace, Para 8–6–6*<br>*FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Para 2–8–1 and Chapter 16.*<br>*AIM, Para 5–5–5, Missed Approach.* | ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 4–8–11, Practice Approaches.*<br>*FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.*<br>*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*<br>*FAA Order 8260.19, Flight Procedures and Airspace.*<br>*FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Para 2–8–1 and Chapter 16.*<br>***AIM, Para 5–4–21, Missed Approach.***<br>*AIM, Para 5–5–5, Missed Approach.* |

**1. PARAGRAPH NUMBER AND TITLE:** 4–8–11. PRACTICE APPROACHES

**2. BACKGROUND:** A review of Mission Support's interpretation of FAA Order JO 7210.3Y, Paragraph 10–4–5b, VFR Practice Approaches, dated March 23, 2015, revealed its content could be incorporated into FAA Order JO 7110.65, Air Traffic Control, and FAA Order JO 7210.3, Facility Operation and Administration. The intent of the interpretation was to ensure facilities adhere to providing instrument flight rules (IFR) separation to visual flight rules (VFR) aircraft conducting practice instrument approaches at airports where required. To align the procedures with FAA Order JO 7210.3, this change revises the title of paragraph 4–8–1 to Practice Instrument Approaches. Revised procedures in FAA Order JO 7210.3 require a facility directive to list the airports where IFR separation is applied to VFR aircraft and is specified as such within the paragraph via this change. The overall format of the paragraph is revised for clarity and standardizes controller responsibility for VFR practice instrument approaches to terminate at the missed approach point unless a published missed approach procedure has been authorized.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4–8–11. PRACTICE APPROACHES** | **4–8–11. PRACTICE INSTRUMENT APPROACHES** |
| Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft. Authorize, withdraw authorization, or refuse to authorize practice approaches as traffic conditions require. Normally, approaches in progress should not be terminated. | Authorize, withdraw authorization, **delay,** or refuse to authorize practice **instrument** approaches **in accordance with the following:** |
| ***NOTE–***<br>*The priority afforded other aircraft over practice instrument approaches is not intended to be so rigidly applied that it causes grossly inefficient application of services.* | Delete |
| **a.** Separation. | **a. When sector/position traffic conditions and/or workload prevent the authorization of practice instrument approaches, advise the pilot of the reason, and if applicable, the anticipated delay until the operation can be approved. Controller-imposed delays should not be indefinite. Normally, approaches in progress should not be terminated.** |
| Add | ***REFERENCE–***<br>***FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.***<br>***FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.*** |
| Add | **b. Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft.** |
| Add | ***NOTE–***<br>***The priority afforded other aircraft over practice instrument approaches is not intended to be so rigidly applied that it causes grossly inefficient application of services.*** |

**1.** IFR aircraft practicing instrument approaches must be afforded approved separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 minima until:

**(a)** The aircraft lands, and the flight is terminated, or

**(b)** The pilot cancels the flight plan.

**c.** IFR aircraft **conducting** practice instrument approaches must be afforded **IFR** separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 **of this order** until **the aircraft lands and the flight is terminated, or the pilot cancels the flight plan.**

Delete

Delete

**d. VFR aircraft conducting practice instrument approaches:**

**1. Must be instructed to maintain VFR on initial contact or as soon as possible thereafter.**

***NOTE–***
***This advisory is intended to remind the pilot that even though ATC is providing IFR-type instructions, the pilot is responsible for compliance with the CFRs governing VFR flight.***

**2.** Where procedures require application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 must be provided. Controller responsibility for separation begins at the point where the approach clearance becomes effective. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–5, Practice Instrument Approaches.*

**2.** Where **a facility directive requires the** application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 **of this order** must be provided. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

No Change

**3. Controller responsibility for IFR separation to VFR aircraft begins at the point where the approach clearance becomes effective and ends when the aircraft reaches the missed approach point, unless IFR separation is required for the missed approach procedure as specified in subparagraph e2 below.**

**3.** Where separation services are not provided to VFR aircraft practicing instrument approaches, the controller must:

**(a)** Instruct the pilot to maintain VFR.

**(b)** Advise the pilot that separation services are not provided.

**4.** Where **a facility directive does not require the application of IFR** separation services to VFR aircraft practicing instrument approaches, the controller must**:**

**(a)** Instruct the pilot to maintain VFR **and advise the pilot that separation services are not provided.**

Delete

| | |
|---|---|
| ***PHRASEOLOGY–***<br>*"(Aircraft identification) MAINTAIN VFR, PRACTICE APPROACH APPROVED, NO SEPARATION SERVICES PROVIDED."* | No Change |
| **(c)** Provide traffic information or advise the pilot to contact the appropriate facility. | **(b)** Provide traffic information or advise the pilot to contact the appropriate facility. |
| **4.** If an altitude is assigned, including at or above/below altitudes, the altitude specified must meet MVA, minimum safe altitude, or minimum IFR altitude criteria. | **5.** If an altitude is assigned, including at or above/below altitudes, the altitude specified must meet MVA, minimum safe altitude, or minimum IFR altitude criteria. |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 7−7−5, Altitude Assignments.* | No Change |
| **5.** All VFR aircraft must be instructed to maintain VFR on initial contact or as soon as possible thereafter. | Delete |
| ***NOTE–***<br>*This advisory is intended to remind the pilot that even though ATC is providing IFR-type instructions, the pilot is responsible for compliance with the applicable parts of the CFR governing VFR flight.* | Delete |
| **b.** Missed Approaches. | **e.** Missed Approaches. |
| **1.** Unless alternate instructions have been issued, IFR aircraft are automatically authorized to execute the missed approach depicted for the instrument approach being flown. | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 4−8−9, Missed Approach.* | No Change |
| **2.** VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved and the practice approach is conducted in accordance with paragraph 4−8−11a2, separation must be provided throughout the procedure including the missed approach. If the practice approach is conducted in accordance with paragraph 4−8−11a3, separation services are not required during the missed approach. | **2.** VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved and the practice approach is conducted in accordance with **sub**paragraph **d2 above**, **IFR** separation must be provided throughout the procedure including the missed approach. If the practice approach is conducted in accordance with **sub**paragraph **d3 above**, **IFR** separation services are not required during the missed approach. |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 7−2−1, Visual Separation.* | Delete |

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**1. PARAGRAPH NUMBER AND TITLE:**
5–4–10. EN ROUTE FOURTH LINE DATA BLOCK USAGE

**2. BACKGROUND:** A training team review of paragraph 5−4−10 revealed inconsistency in fourth line coordination guidance for aircraft conducting celestial navigation training. Subparagraph i identifies a fourth line data use situation for celestial navigation without definitive use guidance and only provides an example. For consistency within the paragraph and to clarify expectations, the example will be removed.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **5–4–10. EN ROUTE FOURTH LINE DATA BLOCK USAGE** | **5–4–10. EN ROUTE FOURTH LINE DATA BLOCK USAGE** |
| **Title** through **h** ***EXAMPLE*** | No Change |
| **i.** Aircraft authorized to conduct celestial navigation training within 30 NM of the route centerline specified within the en route clearance. | **i. Coordination format for a**ircraft authorized to conduct celestial navigation training within 30 NM of the route centerline specified within the en route clearance **must use "CELNAV."** |
| ***EXAMPLE–***<br>*CELNAV* | Delete |

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**1. PARAGRAPH NUMBER AND TITLE:** 7–5–1. AUTHORIZATION

**2. BACKGROUND:** 14 CFR § 91.157 governs Special Visual Flight Rules (SVFR) operations. There have been many interpretations over time attempting to answer field questions concerning SVFR. Not all clarifying language has migrated into the order to institutionalize the determinations.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **7–5–1. AUTHORIZATION** | **7–5–1. AUTHORIZATION** |
| **a.** SVFR operations in weather conditions less than basic VFR minima are authorized: | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.* | ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*<br>***FAA Order JO 7400.11, Airspace Designations and Reporting Points.***<br>***14 CFR Section 91.157, Special VFR Weather Minimums.*** |
| **1.** At any location not prohibited by 14 CFR part 91, Appendix D or when an exemption to 14 CFR part 91 has been granted and an associated LOA established. 14 CFR part 91 does not prohibit SVFR helicopter operations. | No Change |
| **2.** Only within the lateral boundaries of Class B, Class C, Class D, or Class E surface areas, below 10,000 feet MSL. | **2.** Only within the lateral boundaries of Class B, Class C, Class D, or Class E surface areas, below 10,000 feet MSL. **SVFR is not authorized within Class E extension areas.** |
| **3.** Only when requested by the pilot. | No Change |
| **4.** On the basis of weather conditions reported at the airport of intended landing/departure. | **4.** On the basis of weather conditions reported at the airport **for which the surface area is designated**. |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 7–5–6, Climb to VFR.*<br>*FAA Order JO 7110.65, Para 7–5–7, Ground Visibility Below One Mile.* | No Change |
| **5.** When weather conditions are not reported at the airport of intended landing/departure and the pilot advises that VFR cannot be maintained and requests SVFR. | No Change |

***PHRASEOLOGY–***
*CLEARED TO ENTER/OUT OF/THROUGH, (name) SURFACE AREA*

*and if required,*

*(direction) OF (name) AIRPORT (specified routing), and*

*MAINTAIN SPECIAL V–F–R CONDITIONS,*

*and if required,*

*AT OR BELOW (altitude below 10,000 feet MSL)*

*or as applicable under an exemption from 14 CFR Part 91,*

*CLEARED FOR (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*

***PHRASEOLOGY–***
*CLEARED TO ENTER/OUT OF/THROUGH, (name) SURFACE AREA*

*and if required,*

*(direction) OF (name) AIRPORT (specified routing), and*

*MAINTAIN SPECIAL V–F–R CONDITIONS,*

*and if required,*

*AT OR BELOW (altitude below 10,000 feet MSL)*

*or as applicable under an exemption from 14 CFR part 91,*

*CLEARED FOR (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).*

No Change

Add

**b. Do not authorize VFR operations beneath a broken or overcast ceiling within a surface area when the reported ceiling at the primary airport is less than 1,000 feet. A Special VFR clearance is required.**

Add

***REFERENCE–***
***14 CFR Section 91.155(c), Basic VFR Weather Minimums.***

Add

***NOTE–***
***VFR operations are authorized within a surface area when operating above a ceiling that is reported as less than 1,000 feet AGL in accordance with 14 CFR section 91.155(a).***

**b.** SVFR operations may be authorized for aircraft operating in or transiting a Class B, Class C, Class D, or Class E surface area when the primary airport is reporting VFR but the pilot advises that basic VFR cannot be maintained.

***NOTE–***
*The basic requirements for issuance of a SVFR clearance in subparagraph a apply with the obvious exception that weather conditions at the controlling airport are not required to be less than basic VFR minima.*

**c.** SVFR operations may be authorized for aircraft operating in or transiting a Class B, Class C, Class D, or Class E surface area when the primary airport is reporting VFR but the pilot advises that basic VFR cannot be maintained.

No Change

**1. PARAGRAPH NUMBER AND TITLE:**
8–7–3. LONGITUDINAL SEPARATION
8–8–3. LONGITUDINAL SEPARATION
8–9–3. LONGITUDINAL SEPARATION
8–10–3. LONGITUDINAL SEPARATION

**2. BACKGROUND:** The Federal Aviation Administration is implementing a 20 nautical mile longitudinal separation standard in the oceanic areas of the North American, North Atlantic, Caribbean, and Pacific Flight Information Regions. This separation standard will be applicable between Performance–based Communication and Surveillance (PBCS) aircraft that meet or surpass Required Navigation Performance 4 (RNP–4), Required Communication Performance 240 (RCP 240), Required Surveillance Performance 180 (RSP–180), and report via Automatic Dependent Surveillance–Contract (ADS–C) at least every 192 seconds.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **8–7–3. LONGITUDINAL SEPARATION** | **8–7–3. LONGITUDINAL SEPARATION** |
| **Title** through **e1(a)** | No Change |
| Add | **(b) The required periodic contract from TBL 8–7–1 is established prior to the application of ADS–C longitudinal separation, and** |
| **(b)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP). | **(c)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP). |

**OLD**

***TBL 8–7–1***

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP See Note 1** | **RSP See Note 2** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| Add | Add | Add | Add | Add |

**NEW**

***TBL 8–7–1***

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP See Note 1** | **RSP See Note 2** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| **20 NM** | **4** | **240** | **180** | **192 seconds** |

| | |
|---|---|
| ***NOTE–*** | No Change |
| **1.** *Required Communication Performance (RCP).* | |
| **2.** *Required Surveillance Performance (RSP).* | No Change |

**OLD**

**8–8–3. LONGITUDINAL SEPARATION**

**Title** through **f1(a)**

Add

**(b)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

**NEW**

**8–8–3. LONGITUDINAL SEPARATION**

No Change

**(b) The required periodic contract from TBL 8−8−1 is established prior to the application of ADS−C longitudinal separation, and**

**(c)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

**OLD**

***TBL 8−8−1***

**ADS−C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| Add | Add | Add | Add | Add |

**NEW**

***TBL 8−8−1***

**ADS−C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| **20 NM** | **4** | **240** | **180** | **192 seconds** |

**OLD**

**8–9–3. LONGITUDINAL SEPARATION**

**Title** through **c1(a)**

Add

**(b)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (e.g., ATOP);

**NEW**

**8–9–3. LONGITUDINAL SEPARATION**

No Change

**(b) The required periodic contract from TBL 8−9−1 is established prior to the application of ADS−C longitudinal separation, and**

**(c)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (**for example**, ATOP)**.**

**OLD**

*TBL 8–9–1*

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| Add | Add | Add | Add | Add |

**NEW**

*TBL 8–9–1*

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| **20 NM** | **4** | **240** | **180** | **192 seconds** |

**OLD**

**8–10–3. LONGITUDINAL SEPARATION**

**Title** through **c1(a)**

Add

**(b)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

**NEW**

**8–10–3. LONGITUDINAL SEPARATION**

No Change

**(b) The required periodic contract from TBL 8–10–1 is established prior to the application of ADS–C longitudinal separation, and**

**(c)** The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

**OLD**

*TBL 8–10–1*

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| Add | Add | Add | Add | Add |

**NEW**

***TBL 8–10–1***

**ADS–C Criteria**

| Minima | | | | |
|---|---|---|---|---|
| **Standard** | **RNP** | **RCP** | **RSP** | **Maximum ADS-C Periodic Reporting Interval** |
| 50 NM | 10 | 240 | 180 | 27 minutes |
| 50 NM | 4 | 240 | 180 | 32 minutes |
| 30 NM | 4 | 240 | 180 | 10 minutes |
| **20 NM** | **4** | **240** | **180** | **192 seconds** |

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**1. PARAGRAPH NUMBER AND TITLE:**
13–2–1. DESCRIPTION
13–2–5. WEATHER DEVIATION TOOL

**2. BACKGROUND:** A deficiency was discovered in the Advanced Technologies Oceanic Procedures (ATOP) system when issuing weather deviation clearances to aircraft that had intersecting courses or routes with turns and when required navigation performance (RNP) distance-based longitudinal separation was being applied. As a result of this deficiency, a change was made to ATOP that prohibited the issuance of weather deviation clearances when using RNP distance-based longitudinal separation. The weather deviation tool developed for ATOP will once again provide controllers with the ability to issue weather deviation clearances to aircraft that are separated using RNP distance-based longitudinal separation in United States–delegated oceanic airspace.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **13–2–1. DESCRIPTION** | **13–2–1. DESCRIPTION** |
| **Title** through **b6** | No Change |
| Add | **7. Weather Deviation Tool.** |
| **b7** through **b8** | Renumber **b8** through **b9** |

| **OLD** | **NEW** |
|---|---|
| Add | **13–2–5. WEATHER DEVIATION TOOL** |
| Add | **The weather deviation tool adds an additional converging, diverging, and intersecting (CDI) mileage buffer to the required separation calculated by ATOP when RNP distance-based longitudinal separation is being applied.** |
| Add | **a. Deviation monitor window pink advisories require further evaluation before approving a weather deviation clearance.** |
| Add | **b. A pink advisory in the deviation monitor window with a zero or positive value in the +/– column indicates that the aircraft pair is either at or close to the required spacing.** |
| Add | ***NOTE–***<br>***1. The CDI mileage buffer is enforced by ATOP conflict probe.*** |

| | |
|---|---|
| Add | ***2. ATOP enforces an increased ADS−C reporting rate of 64 seconds.*** |
| Add | ***REFERENCE−***<br>***FAA Order JO 7110.65, Para 8−7−3, Longitudinal Separation.***<br>***FAA Order JO 7110.65, Para 8−8−3, Longitudinal Separation.***<br>***FAA Order JO 7110.65, Para 8−9−3, Longitudinal Separation.***<br>***FAA Order JO 7110.65, Para 8−10−3, Longitudinal Separation.***<br>***FAA Order JO 7110.65, Para 13−2−2, Conflict Detection and Resolution.*** |
| **13−2−5** through **13−2−6** | Renumber **13−2−6** through **13−2−7** |