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

**JO 7110.65W**
**CHG 1**

**Effective Date:**
05/26/16

**SUBJ:** Air Traffic Control

1. **Purpose of This Change**. This change transmits revised pages to Federal Aviation Administration Order JO 7110.65W, 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 Web site at http://faa.gov/air_traffic/publications and https://employees.faa.gov/tools_resources/orders_notices/.

4. **Explanation of Policy Change**. See the Explanation of Changes attachment which 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 selected offices in Washington headquarters, regional offices, service area offices, the William J. Hughes Technical Center, and the Mike Monroney Aeronautical Center. Also, copies are sent to all air traffic field facilities and international aviation field offices; and to interested aviation public.

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 Retain this transmittal until superseded by a new basic order.

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

Elizabeth L. Ray

Elizabeth L. Ray *Original Signature on File*
Vice President, Mission Support Services
Air Traffic Organization

Date: 4/7/16

# 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**

This change adds processes for requesting interpretations or clarifications pertaining to FAA Order JO 7110.65 content.

**b. 1-2-6. ABBREVIATIONS**
**2-3-10. CONTROL SYMBOLOGY**
**2-4-17. NUMBERS USAGE**
**2-5-2. NAVAID TERMS**
**2-5-3. NAVAID FIXES**
**3-3-2. CLOSED/UNSAFE RUNWAY INFORMATION**
**3-7-5. PRECISION APPROACH CRITICAL AREA**
**4-1-1. ALTITUDE AND DISTANCE LIMITATIONS**
**4-6-4. HOLDING INSTRUCTIONS**
**4-7-5. MILITARY TURBOJET EN ROUTE DESCENT**
**4-7-13. SWITCHING ILS/MLS RUNWAYS**
**5-1-13. RADAR SERVICE TERMINATION**
**5-9-2. FINAL APPROACH COURSE INTERCEPTION**
**5-9-4. ARRIVAL INSTRUCTIONS**
**5-9-5. APPROACH SEPARATION RESPONSIBILITY**
**5-9-6. SIMULTANEOUS DEPENDENT APPROACHES**
**5-9-9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA) – HIGH UPDATE RADAR**
**5-13-1. MONITOR ON PAR EQUIPMENT**
**5-13-3. MONITOR INFORMATION**
**13-1-8. RECORDING OF CONTROL DATA**

Due to lack of MLS and approach procedures in the NAS, this change removes all MLS references.

**c. 1-2-6. ABBREVIATIONS**

This change adds the abbreviation "NOWGT" to the subject paragraph.

**d. 2-3-6. AIRCRAFT TYPE**

This change deletes the contents of Appendices A, B, and C, and redirects the reader to FAA Order 7360.X, Aircraft Type Designators.

**e. 2-6-2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE**
**2-9-3. CONTENT**

This change reflects the migration of the En Route Flight Advisory Service responsibilities into the InFlight position and the discontinued use of the term "Flight Watch" within the CONUS and Puerto Rico.

**f. 2-6-4. WEATHER AND CHAFF SERVICES**

This change adds the requirement for issuing an altitude to maintain when clearing an aircraft to deviate after a crossing altitude had already been issued, including Climb Via or Descend Via clearances on SID/STAR procedures.

**g. 2-10-1. EN ROUTE SECTOR TEAM POSITION RESPONSIBILITIES**

This change adds oceanic sector teams to the title and deletes subparagraph 2-10-1a2. It also removes the remaining subparagraph designators that are no longer needed.

**h. 2-10-2. TERMINAL RADAR/NONRADAR TEAM RESPONSIBILITIES**

This change deletes subparagraph 2-10-2a2 and removes the subparagraph 2-10-2 designators that are no longer needed.

**i. 2-10-3. TOWER TEAM RESPONSIBILITIES**

This change deletes subparagraph 2-10-3a2 and removes the subparagraph 2-10-3a designators that are no longer needed.

**j. 3-3-7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT**

The MM, or in the absence of a MM, 1/2 mile final and the IM or CAT II Missed Approach Point (MAP) will be used as reference points for the issuance of the localizer reliability advisory.

**k. 3-8-1. SEQUENCE/SPACING APPLICATION**

This change advises pilots to inform ATC as soon as possible of any delay clearing the runway during their stop-and-go or full stop landing.

**l. 3-9-6. SAME RUNWAY SEPARATION**

This change makes all the figures consistent with the logic provided in the text. The shaded aircraft in FIG 3-9-3 is moved to be within the confines of the runway, similar to the departure aircraft depicted in FIG 3-9-1 and FIG 3-9-2.

**m. 3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS**

This change relocates a subparagraph of 3-9-9, and renumbers the remaining subparagraphs.

**n. 3-10-5. LANDING CLEARANCE**

This change allows controllers to be clearer with their instructions when controlling aircraft in the traffic pattern while utilizing LUAW procedures. These additional examples will reduce pilot confusion.

**o. 4-2-5. ROUTE OR ALTITUDE AMENDMENTS**

This change conveys to ATC they cannot modify these restrictions (speed and/or crossing altitudes) since they are needed to ensure obstacle avoidance.

**p. 4-3-2. DEPARTURE CLEARANCES**

This change clarifies that both textual and graphic ODPs can be assigned by ATC to ensure aircraft separation.

**q. 4-7-12. AIRPORT CONDITIONS**
**4-8-1. APPROACH CLEARANCE**
**4-8-9. MISSED APPROACH**
**4-8-10. APPROACH INFORMATION**

This change prescribes controller responsibility when informed that a pilot will conduct Cold Temperature Compensation (CTC).

**r. 4-8-1. APPROACH CLEARANCE**

This change revises the associated FIG 4-8-5 to be consistent with the content.

**s. 5-1-3. RADAR USE**

This change provides procedural guidance for facilities providing ATC services using ADS-B and WAM as surveillance sources.

**t. 5-4-3. METHODS**

This change allows the use of the CID as a means for the transferring controller to identify an aircraft in making an intra-facility point out.

**u. 5-6-2. METHODS**

This change adds the requirement to issue an altitude to maintain when clearing an aircraft to deviate off of a procedure containing published crossing restrictions except when the aircraft has not yet been cleared to navigate vertically.

**v. 5-9-10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS**

This change allows controllers to discontinue using 1,000 feet vertical or 3 miles radar separation between aircraft conducting an RNAV (RNP) approach that contains a radius-to-fix (RF) leg and aircraft conducting a straight-in ILS/RNAV with vertical guidance/GLS, or another RNAV (RNP) approach with an RF leg once the aircraft are established on their respective approach procedures.

**w. 7-2-1. VISUAL SEPARATION**

This change clarifies existing procedures and responsibilities and revises phraseology to ensure understanding of ATC clearances and instructions.

**x. 7-4-4. APPROACHES TO MULTIPLE RUNWAYS**

This change permits the use of RNAV procedures and direct courses that will intercept the extended centerline of the runway at an angle not greater than 30 degrees, to be used in lieu of radar vectors. This change also permits use of procedures using radius-to-fix legs that intercept final in lieu of 30-degree intercept provisions otherwise contained in this paragraph.

**y. 8-7-3. LONGITUDINAL SEPARATION**
**8-8-3. LONGITUDINAL SEPARATION**
**8-9-3. LONGITUDINAL SEPARATION**
**8-10-3. LONGITUDINAL SEPARATION**

This change implements ADS-B ITP to allow climb and descent of appropriately equipped aircraft using reduced separation in the oceanic domain upon pilot request.

**z. 9-1-2. SPECIAL HANDLING**

This change increases Air Traffic awareness that aircraft using the call sign FLIGHT VAL will be performing Flight Validation activities that are similar to Flight Check activities, but no additional priority is granted.

**aa. 10-2-13. MANPADS ALERT**

This change identifies the DEN as the FAA Headquarters office for MANPADS notifications, adds a clarification edit, and a reference to FAA Order JO 7610.4.

**ab. 11-1-1. DUTY RESPONSIBILITY**
**11-1-2. DUTIES AND RESPONSIBILITIES**
**11-1-3. TIME–BASED FLOW MANAGEMENT (TBFM)**

This change incorporates responsibilities for the use of TBFM into FAA Order JO 7110.65. It provides specific directions to facilities as to duties and responsibilities.

**ac. 13-1-9. ACKNOWLEDGEMENT OF AUTOMATED NOTIFICATION**

This change adds the requirement for the first sector displaying the Embedded Route Text (ERT) coding to issue and acknowledge the ERT coding unless otherwise coordinated or specified in appropriate facility directives.

**ad. Appendix A - Aircraft Information Fixed-Wing Aircraft**
**Appendix B - Aircraft Information Helicopters/Rotorcrafts**
**Appendix C - Aircraft Information Specific Amateur–Built/Experimental Aircraft**

This change directs readers to a new source of aircraft information and deletes Appendices A, B, and C.

**ae.** Entire publication

A global search and replace was conducted on the term "A/FD – Airport/Facility Directory." This term is now being referred to as "Chart Supplement U.S."

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 Web site at http://www.faa.gov/regulations_policies/orders_notices.

### 1–1–4. WHAT THIS ORDER CANCELS

FAA Order JO 7110.65V, Air Traffic Control, dated April 3, 2014, 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. SUBMISSION CUTOFF AND EFFECTIVE DATES

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

*TBL 1–1–1*
**Publication Schedule**

| Basic or Change | Cutoff Date for Submission | Effective Date of Publication |
|---|---|---|
| JO 7110.65W | 6/25/15 | 12/10/15 |
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### 1–1–7. DELIVERY DATES

**a.** 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.

**b.** 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
Air Traffic Procedures (AJV-8)
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 the Air Traffic Procedures Correspondence Mailbox at 9−AJV−8−HQ−Correspondence@faa.gov. The submission should include a description of the recommended change, and the proposed language to be used in the order.

**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.** Interpretation requests from field air traffic personnel must be submitted as follows:

**1.** The request must be submitted, in writing, by an Air Traffic Facility/District manager to their Service Area Director.

**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.

**3.** If it is determined that an interpretation is required, the Service Area Director must submit the request, in writing, to the Air Traffic Procedures Directorate, for a response.

**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.

**1.** The Service Center Operations Support Group may consult with the Air Traffic Procedures Directorate when preparing their response.

**2.** The Service Center Operations Support Group must provide a written response to the requestor and forward the response to the Air Traffic Procedures Directorate.

**c.** Interpretation requests from all other sources must be submitted, in writing, to the Air Traffic Procedures Directorate through the Air Traffic Procedures correspondence mailbox.

***NOTE−***
*Interpretations can be accessed through the Air Traffic Control Interpretation link at the following website: https://my.faa.gov/org/linebusiness/ato/mission_support/air_traffic_procedures.html.*

## 1−1−10. PROCEDURAL LETTERS OF AGREEMENT

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. Letters of agreement 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−***
*FAAO JO 7110.65, Para 2−1−1, ATC Service.*
*FAAO JO 7210.3, Para 4−3−1, Letters of Agreement.*

## 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 any 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.)

*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/Airfield Operations<br>Bldg 4 Room 240<br>6500 S. MacArthur Blvd<br>Oklahoma City, OK 73169<br>Email: hqaffsa.xa@us.af.mil |
| U.S. Army | Director<br>USAASA (MOAS−AS)<br>9325 Gunston Road, Suite N319<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−*
*FAAO JO 7110.65, Para 2−1−12, Military Procedures*
*FAAO JO 7110.65, Para 3−1−3, Use of Active Runways.*

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

Every employee is responsible to ensure the safety of equipment and procedures used in the provision of services within the National Airspace System (NAS). Risk assessment techniques and mitigations, as appropriate, are intended for implementation of any planned safety significant changes within the NAS, as directed by FAA Order 1100.161, Air Traffic Safety Oversight. Direction regarding the SMS and its application can be found in the FAA Safety Management System Manual and FAA Order 1100.161. The SMS will be implemented through a period of transitional activities. (Additional information pertaining to these requirements and processes can be obtained by contacting the service area offices.)

## 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 (i.e., 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

This order is distributed to selected offices in Washington headquarters, regional offices, service area offices, the William J. Hughes Technical Center, and the Mike Monroney Aeronautical Center. Also, copies are sent to all air traffic field facilities and international aviation field offices; and to interested aviation public.

| Abbreviation | Meaning |
|---|---|
| FDB ....... | Full Data Block |
| FDIO ...... | Flight Data Input/Output |
| FDP ....... | Flight data processing |
| FIR ........ | Flight Information Region |
| FL ......... | Flight level |
| FLIP ....... | Flight Information Publication |
| FLM ....... | Front−Line Manager |
| FLY ....... | Fly or flying |
| FMS ....... | Flight Management System |
| FMSP ...... | Flight Management System Procedure |
| 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 |
| HAR ....... | High Altitude Redesign |
| 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 |
| LLWS ...... | Low Level Wind Shear |
| L/MF ...... | Low/medium frequency |

| Abbreviation | Meaning |
|---|---|
| LORAN .... | Long Range Navigation System |
| Mach ...... | Mach number |
| MALS ..... | Medium Intensity Approach Light System |
| MALSR .... | Medium Approach Light System with runway alignment indicator lights |
| 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 |
| 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 |

| Abbreviation | Meaning |
|---|---|
| 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 |
| NRR ....... | Nonrestrictive Route |
| NRS ....... | Navigation Reference System |
| NTZ ....... | No transgression zone |
| NWS ....... | National Weather Service |
| NWSOP .... | National Winter Storm 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 |
| PAR ....... | Preferred arrival route |
| PBCT ...... | Proposed boundary crossing time |
| P/CG ....... | Pilot/Controller Glossary |
| PDAR ...... | Preferential departure arrival route |
| PDC ....... | Pre−Departure Clearance |
| PDR ....... | Preferential departure route |
| 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) |
| RATCF ..... | Radar Air Traffic Control Facility (USN) |
| 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 |
| RNAV ...... | Area navigation |
| RNP ....... | Required Navigation Performance |
| RTQC ...... | Real−Time Quality Control |
| RVR ....... | Runway visual range |

| Abbreviation | Meaning |
|---|---|
| RVSM ...... | Reduced Vertical Separation Minimum |
| RVV ....... | Runway visibility value |
| SAA ....... | Special Activity Airspace |
| SAR ....... | Search and rescue |
| SATCOM ... | Satellite Communication |
| SDP ....... | Surveillance Data Processing |
| SELCAL .... | Selective Calling System |
| SFA ........ | Single frequency approach |
| SFO ....... | Simulated flameout |
| SID ........ | Standard Instrument Departure |
| SIGMET .... | Significant meteorological information |
| SPA ........ | Special Posting Area |
| SPECI ...... | Nonroutine (Special) Aviation Weather Report |
| STAR ...... | Standard terminal arrival |
| STARS ..... | Standard Terminal Automation Replacement System |
| STMC ...... | Supervisory Traffic Management Coordinator |
| STMCIC .... | Supervisory Traffic Management Coordinator−in−charge |
| STOL ...... | Short takeoff and landing |
| SURPIC .... | Surface Picture |
| SVFR ...... | Special Visual Flight Rules |
| TAA ....... | Terminal arrival area |
| TAS ....... | Terminal Automation Systems |
| TACAN .... | TACAN UHF navigational aid (omnidirectional course and distance information) |
| TAWS ...... | Terrain Awareness Warning System |
| TCAS ...... | Traffic Alert and Collision Avoidance System |
| TCDD ...... | Tower cab digital display |
| TDLS ...... | Terminal Data Link System |
| TDW ...... | Tower display workstation |
| TDWR ..... | Terminal Doppler Weather Radar |
| TDZL ...... | Touchdown Zone Light System |
| TFMS ...... | Traffic Flow Management System |
| TMC ....... | Traffic Management Coordinator |
| TMU ....... | Traffic Management Unit |
| TRACON ... | Terminal Radar Approach Control |
| TRSA ...... | Terminal radar service area |
| UFO ....... | Unidentified flying object |
| UHF ....... | Ultra high frequency |

| Abbreviation | Meaning |
|---|---|
| USA ....... | United States Army |
| USAF ...... | United States Air Force |
| USN ....... | United States Navy |
| UTC ....... | Coordinated universal time |
| UTM ....... | Unsuccessful transmission message |
| UUA ....... | Urgent pilot weather report |
| VFR ....... | Visual flight rules |
| VHF ....... | Very high frequency |
| VMC ...... | Visual meteorological conditions |
| VNAV ...... | Vertical Navigation |
| VOR ....... | VHF navigational aid (omnidirectional course information) |
| VOR/DME .. | Collocated VOR and DME navigational aids (VHF course and UHF distance information) |
| VORTAC ... | Collocated VOR and TACAN navigation aids (VHF and UHF course and UHF distance information) |
| VR ........ | VFR military training route |
| VSCS ...... | Voice Switching and Control System |
| WAAS ..... | Wide Area Augmentation System |
| WARP ..... | Weather and Radar Processing |
| WATRS ..... | West Atlantic Route System |
| WSO ...... | Weather Service Office |
| WSP ....... | Weather System Processor |
| WST ....... | Convective SIGMET |

**3.** If known, type of aircraft and altitude.

**4.** ETA over the fix the aircraft is approaching, if appropriate.

***PHRASEOLOGY−***
*TRAFFIC, (number) MILES/MINUTES (direction) OF (airport or fix), (direction)−BOUND,*

*and if known,*

*(type of aircraft and altitude),*

*ESTIMATED (fix) (time),*

*or*

*TRAFFIC, NUMEROUS AIRCRAFT VICINITY (location).*

*If altitude is unknown,*

*ALTITUDE UNKNOWN.*

***EXAMPLE−***
*"Traffic, one zero miles east of Forsythe V−O−R, Southbound, M−D Eighty, descending to one six thousand."*
*"Traffic, reported one zero miles west of Downey V−O−R, northbound, Apache, altitude unknown, estimated Joliet V−O−R one three one five."*
*"Traffic, eight minutes west of Chicago Heights V−O−R, westbound, Mooney, eight thousand, estimated Joliet V−O−R two zero three five."*
*"Traffic, numerous aircraft, vicinity of Delia airport."*

**c.** For aircraft displaying Mode C, not radar identified, issue indicated altitude.

***EXAMPLE−***
*"Traffic, one o'clock, six miles, eastbound, altitude indicates six thousand five hundred."*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−1−6, Traffic Information.*
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*
*FAAO JO 7110.65, Para 7−6−10, VFR Departure Information.*

## 2−1−22. BIRD ACTIVITY INFORMATION

**a.** Issue advisory information on pilot-reported, tower-observed, or radar-observed and pilot-verified bird activity. Include position, species or size of birds, if known, course of flight, and altitude. Do this for at least 15 minutes after receipt of such information from pilots or from adjacent facilities unless visual observation or subsequent reports reveal the activity is no longer a factor.

***EXAMPLE−***
*"Flock of geese, one o'clock, seven miles, northbound, last reported at four thousand."*
*"Flock of small birds, southbound along Mohawk River, last reported at three thousand."*
*"Numerous flocks of ducks, vicinity Lake Winnebago, altitude unknown."*

**b.** Relay bird activity information to adjacent facilities and to FSSs whenever it appears it will become a factor in their areas.

## 2−1−23. TRANSFER OF POSITION RESPONSIBILITY

The transfer of position responsibility must be accomplished in accordance with the "Standard Operating Practice (SOP) for the Transfer of Position Responsibility," and appropriate facility directives each time operational responsibility for a position is transferred from one specialist to another.

## 2−1−24. WHEELS DOWN CHECK

*USA/USAF/USN*

Remind aircraft to check wheels down on each approach unless the pilot has previously reported wheels down for that approach.

***NOTE−***
*The intent is solely to remind the pilot to lower the wheels, not to place responsibility on the controller.*

**a.** Tower must issue the wheels down check at an appropriate place in the pattern.

***PHRASEOLOGY−***
*CHECK WHEELS DOWN.*

**b.** Approach/arrival control, GCA must issue the wheels down check as follows:

**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.*

## 2−1−25. 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.** Possible suspicious aircraft/pilot activity as prescribed in FAA Order JO 7610.4, paragraph 7−3−1.

## 2−1−26. 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).*

***REFERENCE−***
*FAAO 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting, Para 84, Pilot Deviations.*

## 2−1−27. 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.

**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 are 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 120−55C, 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 climb."*

***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."*

## 2−1−28. RVSM OPERATIONS

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−sectorcoordination following the pilot request to access the airspace. Operations supervisor/CIC responsibilities are defined in FAAO JO 7210.3, Chapter 6, Section 9, Reduced Vertical Separation Minimum (RVSM).*

**d.** Air traffic managers at automated terminal radar facilities may waive the requirement to use flight progress strips provided:

**1.** Backup systems such as multiple radar sites/systems or single site radars with CENRAP are utilized.

**2.** Local procedures are documented in a facility directive. These procedures should include but not be limited to:

**(a)** Departure areas and/or procedures.

**(b)** Arrival procedures.

**(c)** Overflight handling procedures.

**(d)** Transition from radar to nonradar.

**(e)** Transition from ARTS to non−ARTS.

**(f)** Transition from ASR to CENRAP.

**(g)** Transition to or from ESL.

**3.** No misunderstanding will occur as a result of no strip usage.

**4.** Unused flight progress strips, facility developed forms and/or blank notepads shall be provided for controller use.

**5.** Facilities shall revert to flight progress strip usage if backup systems referred to in subpara d1 are not available.

**e.** Air traffic managers at FDIO locations may authorize reduced lateral spacing between fields so as to print all FDIO data to the left of the strip perforation. When using FAA Form 7230−7.2, all items will retain the same relationship to each other as they do when the full length strip (FAA Form 7230−7.1) is used.

## 2−3−5. AIRCRAFT IDENTITY

Indicate aircraft identity by one of the following using combinations not to exceed seven alphanumeric characters:

**a.** Civil aircraft, including the air-carrier letter-digit registration number which can include the letter "T" for air taxi, the letter "L" for MEDEVAC, or the 3-letter company designator specified in FAA Order JO 7340.2, Contractions, followed by the trip or flight number. Use the operating air carrier's company name in identifying equipment interchange flights.

***EXAMPLE−***
*"N12345."*
*"TN5552Q."*
*"AAl192."*
*"LN751B."*

***NOTE−***
*The letter "L" is not to be used for air carrier/air taxi* MEDEVAC *aircraft.*

**b.** Military Aircraft.

**1.** Prefixes indicating branch of service and/or type of mission followed by the last 5 digits of the serial number (the last 4 digits for CFC and CTG). (See TBL 2−3−6 and TBL 2−3−7.)

**2.** Pronounceable words of 3, 4, 5, and 6 letters followed by a 4−, 3−, 2−, or 1−digit number.

***EXAMPLE−***
*"SAMP Three One Six."*

**3.** Assigned double-letter 2−digit flight number.

**4.** Navy or Marine fleet and training command aircraft, one of the following:

**(a)** The service prefix and 2 letters (use phonetic alphabet equivalent) followed by 2 or 3 digits.

*TBL 2−3−6*
**Branch of Service Prefix**

| Prefix | Branch |
|---|---|
| A | U.S. Air Force |
| C | U.S. Coast Guard |
| G | Air or Army National Guard |
| R | U.S. Army |
| VM | U.S. Marine Corps |
| VV | U.S. Navy |
| CFC | Canadian Forces |
| CTG | Canadian Coast Guard |

*TBL 2−3−7*
**Military Mission Prefix**

| Prefix | Mission |
|---|---|
| E | Medical Air Evacuation |
| F | Flight Check |
| L | LOGAIR (USAF Contract) |
| RCH | AMC (Air Mobility Command) |
| S | Special Air Mission |

**(b)** The service prefix and a digit and a letter (use phonetic alphabet equivalent) followed by 2 or 3 digits.

**5.** Aircraft carrying the President, Vice President, and/or their family members will use the identifiers in the following tables. See TBL 2−3−8 and TBL 2−3−9.

*TBL 2−3−8*
**President and Family**

| Service | President | Family |
|---|---|---|
| Air Force | AF1 | EXEC1F |
| Marine | VM1 | EXEC1F |
| Navy | VV1 | EXEC1F |
| Army | RR1 | EXEC1F |
| Coast Guard | C1 | EXEC1F |
| Guard | G1 | EXEC1F |
| Commercial | EXEC1 | EXEC1F |

*TBL 2−3−9*
**Vice President and Family**

| Service | Vice President | Family |
|---|---|---|
| Air Force | AF2 | EXEC2F |
| Marine | VM2 | EXEC2F |
| Navy | VV2 | EXEC2F |
| Army | RR2 | EXEC2F |
| Coast Guard | C2 | EXEC2F |
| Guard | G2 | EXEC2F |
| Commercial | EXEC2 | EXEC2F |

**c.** Special-use. Approved special-use identifiers.

## 2−3−6. AIRCRAFT TYPE

Use the approved aircraft type designator, in accordance with FAA Order 7360.1, Aircraft Type Designators.

## 2−3−7. USAF/USN UNDERGRADUATE PILOTS

To identify aircraft piloted by solo USAF/USN undergraduate student pilots (who may occasionally request revised clearances because they normally are restricted to flight in VFR conditions), the aircraft identification in the flight plan shall include the letter "Z" as a suffix. Do not use this suffix, however, in ground-to-air communication.

***NOTE−***
*USAF solo students who have passed an instrument certification check may penetrate cloud layers in climb or descent only. Requests for revised clearances to avoid clouds in level flight can still be expected. This does not change the requirement to use the letter "Z" as a suffix to the aircraft identification.*

***REFERENCE−***
*FAAO JO 7110.65, Para 2−4−20, Aircraft Identification.*
*FAAO JO 7610.4, Chapter 12, Section 10, USAF Undergraduate Flying Training (UFT)/Pilot Instructor Training (PIT)/Introduction To Fighter Fundamentals.*

## 2−3−8. AIRCRAFT EQUIPMENT SUFFIX

**a.** Indicate, for both VFR and IFR operations, the aircraft's radar transponder, DME, or navigation capability by adding the appropriate symbol, preceded by a slant. (See TBL 2−3−10.)

**b.** GNSS-equipped aircraft:

**1.** Have an equipment suffix of /G, /L, /S, or /V.

**2.** May be determined by executing an ICAO flight plan readout and verifying a filed "G" in the ICAO equipment list.

**3.** May be determined by verifying with the pilot that the aircraft is GNSS-equipped.

**c.** When forwarding this information, state the aircraft type followed by the word "slant" and the appropriate phonetic letter equivalent of the suffix.

***EXAMPLE−***
*"Cessna Three−ten slant Tango."*
*"A−Ten slant November."*
*"F−Sixteen slant Papa."*
*"Seven−sixty−seven slant Golf."*

**d.** Utilize aircraft equipment suffix /O to indicate "RVSM−capable, no transponder."

***NOTE−***
*/O is for ATC use only. Users are not authorized to file this suffix.*

## 2−3−9. CLEARANCE STATUS

Use an appropriate clearance symbol followed by a dash (−) and other pertinent information to clearly show the clearance status of an aircraft. To indicate delay status use:

**a.** The symbol "H" at the clearance limit when holding instructions have been included in the aircraft's original clearance. Show detailed holding information following the dash when holding differs from the established pattern for the fix; i.e., turns, leg lengths, etc.

**b.** The symbols "F" or "O" to indicate the clearance limit when a delay is not anticipated.

*TBL 2−3−10*
**Aircraft Equipment Suffixes**

| | Navigation Capability | Transponder Capability | Suffix |
|---|---|---|---|
| RVSM | Any | Failed transponder or Failed Mode C capability | /H |
| | No GNSS, No RNAV | Transponder with Mode C | /W |
| | RNAV, No GNSS | Transponder with Mode C | /Z |
| | GNSS | Transponder with Mode C | /L |
| | | | |
| No RVSM | No DME | No transponder | /X |
| | | Transponder with no Mode C | /T |
| | | Transponder with Mode C | /U |
| | DME | No transponder | /D |
| | | Transponder with no Mode C | /B |
| | | Transponder with Mode C | /A |
| | TACAN | No transponder | /M |
| | | Transponder with no Mode C | /N |
| | | Transponder with Mode C | /P |
| | RNAV, No GNSS | No transponder | /Y |
| | | Transponder with no Mode C | /C |
| | | Transponder with Mode C | /I |
| | GNSS | No transponder | /V |
| | | Transponder with no Mode C | /S |
| | | Transponder with Mode C | /G |

## 2−3−10. CONTROL SYMBOLOGY

Use authorized control and clearance symbols or abbreviations for recording clearances, reports, and instructions. Control status of aircraft must always be current. You may use:

**a.** Plain language markings when it will aid in understanding information.

**b.** Locally approved identifiers. Use these only within your facility and not on teletypewriter or interphone circuits.

**c.** Plain sheets of paper or locally prepared forms to record information when flight progress strips are not used. (See TBL 2−3−11 and TBL 2−3−12.)

**d.** Control Information Symbols.
(See FIG 2−3−7 and FIG 2−3−8.)

***REFERENCE−***
*FAAO JO 7110.65, Para 4−5−3, Exceptions.*

*TBL 2−3−11*
**Clearance Abbreviations**

| Abbreviation | Meaning |
|---|---|
| A | Cleared to airport (point of intended landing) |
| B | Center clearance delivered |
| C | ATC clears (when clearance relayed through non−ATC facility) |
| CAF | Cleared as filed |
| D | Cleared to depart from the fix |
| F | Cleared to the fix |
| H | Cleared to hold and instructions issued |
| L | Cleared to land |
| N | Clearance not delivered |
| O | Cleared to the outer marker |
| PD | Cleared to climb/descend at pilot's discretion |
| Q | Cleared to fly specified sectors of a NAVAID defined in terms of courses, bearings, radials or quadrants within a designated radius. |
| T | Cleared through (for landing and takeoff through intermediate point) |
| V | Cleared over the fix |
| X | Cleared to cross (airway, route, radial) at (point) |
| Z | Tower jurisdiction |

*TBL 2−3−12*
**Miscellaneous Abbreviations**

| Abbreviation | Meaning |
|---|---|
| BC | Back course approach |
| CT | Contact approach |
| FA | Final approach |
| FMS | Flight management system approach |
| GPS | GPS approach |
| I | Initial approach |
| ILS | ILS approach |
| MA | Missed approach |
| NDB | Nondirectional radio beacon approach |
| OTP | VFR conditions−on−top |
| PA | Precision approach |
| PT | Procedure turn |
| RA | Resolution advisory (Pilot reported TCAS event) |
| RH | Runway heading |
| RNAV | Area navigation approach |
| RP | Report immediately upon passing (fix/altitude) |
| RX | Report crossing |
| SA | Surveillance approach |
| SI | Straight−in approach |
| TA | TACAN approach |
| TL | Turn left |
| TR | Turn right |
| VA | Visual approach |
| VR | VOR approach |

**i.** Radar beacon codes. The separate digits of the 4−digit code.

***EXAMPLE−***

| Code | Statement |
|---|---|
| 1000 | "One zero zero zero." |
| 2100 | "Two one zero zero." |

**j.** Runways. The word "runway," followed by the separate digits of the runway designation. For a parallel runway, state the word "left," "right," or "center" if the letter "L," "R," or "C" is included in the designation.

***EXAMPLE−***

| Designation | Statement |
|---|---|
| 3 | "Runway Three." |
| 8L | "Runway Eight Left." |
| 27R | "Runway Two Seven Right." |

**k.** Frequencies.

**1.** The separate digits of the frequency, inserting the word "point" where the decimal point occurs.

**(a)** Omit digits after the second digit to the right of the decimal point.

**(b)** When the frequency is in the L/MF band, include the word "kiloHertz."

***EXAMPLE−***

| Frequency | Statement |
|---|---|
| 126.55 MHz | "One two six point five five." |
| 369.0 MHz | "Three six niner point zero." |
| 121.5 MHz | "One two one point five." |
| 135.275 MHz | "One three five point two seven." |
| 302 kHz | "Three zero two kiloHertz." |

**2.** *USAF/USN.* Local channelization numbers may be used in lieu of frequencies for locally based aircraft when local procedures are established to ensure that local aircraft and ATC facilities use the same channelization.

***EXAMPLE−***

| Frequency | Statement |
|---|---|
| 275.8 MHz | "Local channel one six." |

**3.** Issue TACAN frequencies by stating the assigned two− or three−digit channel number.

**l.** Speeds.

**1.** The separate digits of the speed followed by "knots" except as required by para 5−7−2, Methods.

***EXAMPLE−***

| Speed | Statement |
|---|---|
| 250 | "Two five zero knots." |
| 190 | "One niner zero knots." |

**2.** The separate digits of the Mach number preceded by "Mach."

***EXAMPLE−***

| Mach Number | Statement |
|---|---|
| 1.5 | "Mach one point five." |
| 0.64 | "Mach point six four." |
| 0.7 | "Mach point seven." |

**m.** Miles. The separate digits of the mileage followed by the word "mile."

***EXAMPLE−***
*"Three zero mile arc east of Nottingham."*
*"Traffic, one o'clock, two five miles, northbound, D−C Eight, flight level two seven zero."*

## 2−4−18. NUMBER CLARIFICATION

**a.** If deemed necessary for clarity, and after stating numbers as specified in para 2−4−17, Numbers Usage, controllers may restate numbers using either group or single-digit form.

***EXAMPLE−***
*"One Seven Thousand, Seventeen Thousand."*
*"Altimeter Two Niner Niner Two, Twenty Nine Ninety Two."*
*"One Two Six Point Five Five, One Twenty Six Point Fifty Five."*

## 2−4−19. FACILITY IDENTIFICATION

Identify facilities as follows:

**a.** Airport traffic control towers. State the name of the facility followed by the word "tower." Where military and civil airports are located in the same general area and have similar names, state the name of the military service followed by the name of the military facility and the word "tower."

***EXAMPLE−***
*"Columbus Tower."*
*"Barksdale Tower."*
*"Navy Jacksonville Tower."*

**b.** Air route traffic control centers. State the name of the facility followed by the word "center."

**c.** Approach control facilities, including RAPCONs, RATCFs, and ARACs. State the name of the facility followed by the word "approach." Where military and civil facilities are located in the same general area and have similar names, state the name of the military service followed by the name of the military facility and the word "approach."

***EXAMPLE−***
*"Denver Approach."*
*"Griffiss Approach."*
*"Navy Jacksonville Approach."*

**d.** Functions within a terminal facility. State the name of the facility followed by the name of the function.

***EXAMPLE−***
*"Boston Departure."*
*"LaGuardia Clearance Delivery."*
*"O'Hare Ground."*

**e.** When calling or replying on an interphone line which connects only two non−VSCS equipped facilities, you may omit the facility name.

***EXAMPLE−***
*"Bradford High, Handoff."*

**f.** FAA flight service stations. State the name of the station followed by the word "radio."

***EXAMPLE−***
*"Altoona Radio."*

**g.** Radar facilities having ASR or PAR but not providing approach control service. State the name of the facility, followed by the letters "G−C−A."

***EXAMPLE−***
*"Corpus Christi G−C−A."*
*"Davison G−C−A."*

## 2−4−20. AIRCRAFT IDENTIFICATION

Use the full identification in reply to aircraft with similar sounding identifications. For other aircraft, the same identification may be used in reply that the pilot used in his/her initial callup except use the correct identification after communications have been established. Identify aircraft as follows:

**a.** U.S. registry aircraft. State one of the following:

***REFERENCE−***
*FAAO JO 7110.65, Para 2−4−8, Radio Message Format.*
*FAAO JO 7110.65, Para 2−4−9, Abbreviated Transmissions.*
*FAAO JO 7110.65, Para 2−4−15, Emphasis for Clarity.*
*FAAO JO 7110.65, Para 2−4−17, Numbers Usage.*

**1.** Civil. State the prefix "November" when establishing initial communications with U.S. registered aircraft followed by the ICAO phonetic pronunciation of the numbers/letters of the aircraft registration. The controller may state the aircraft type, the model, the manufacturer's name, followed by the ICAO phonetic pronunciation of the numbers/letters of the aircraft registration if used by the pilot on the initial or subsequent call.

***EXAMPLE−***
*Air traffic controller's initiated call:*

*"November One Two Three Four Golf."*
*"November One Two Three Four."*

*Responding to pilot's initial or subsequent call:*

*"Jet Commander One Two Three Four Papa."*
*"Bonanza One Two Three Four Tango."*
*"Sikorsky Six Three Eight Mike Foxtrot."*

***NOTE−***
*If aircraft identification becomes a problem when the procedures specified above are used, the call sign must be restated after the flight number of the aircraft involved.*

***EXAMPLE−***
*"American Five Twenty−One American."*
*"Commuter Six Eleven Commuter."*
*"General Motors Thirty−Seven General Motors."*

***REFERENCE−***
*FAAO JO 7210.3, Para 2−1−13, Aircraft Identification Problems.*

**2.** Air carrier and other civil aircraft having FAA authorized call signs. State the call sign followed by the flight number in group form.

***NOTE−***
*"Group form" is the pronunciation of a series of numbers as the whole number, or pairs of numbers they represent rather than pronouncing each separate digit. The use of group form may, however, be negated by four-digit identifiers or the placement of zeros in the identifier.*

# Section 5. Route and NAVAID Description

## 2−5−1. AIR TRAFFIC SERVICE (ATS) ROUTES

Describe ATS routes as follows:

**a.** VOR/VORTAC/TACAN airways or jet routes. State the word "Victor" or the letter "J" followed by the number of the airway or route in group form.

***EXAMPLE−***
*"Victor Twelve."*
*"J Five Thirty−Three."*

**b.** VOR/VORTAC/TACAN alternate airways. State the word "Victor" followed by the number of the airway in group form and the alternate direction.

***EXAMPLE−***
*"Victor Twelve South."*

**c.** Colored/L/MF airways. State the color of the airway followed by the number in group form.

***EXAMPLE−***
*"Blue Eighty−One."*

**d.** Named Routes. State the words "North American Route" or "Bahama Route" followed by the number of the route in group form.

***EXAMPLE−***
*"North American Route Sixty−Seven Bravo."*
*"Bahama Route Fifty−Five Victor."*

**e.** Air Traffic Service (ATS) routes. State the letter(s) of the route phonetically, followed by the number of the route in group form.

***EXAMPLE−***
*"Romeo Twenty."*
*"Alfa Fifty."*
*"Golf Sixty−one."*
*"Alfa Seven Hundred."*

**f.** Military Training Routes (MTRs). State the letters "I−R" or "V−R" followed by the number of the route in group form.

***EXAMPLE−***
*"I−RFive Thirty−one."*
*"V−R Fifty−two."*

**g.** Published RNAV routes.

**1.** High Altitude − State the letter "Q" followed by the route number in group form.

***EXAMPLE−***
*"Q One Forty−five."*

**2.** Low Altitude − State the letter of the route phonetically, followed by the number of the route in group form.

***EXAMPLE−***
*"Tango Two Ten."*

## 2−5−2. NAVAID TERMS

**a.** Describe NAVAIDs as follows:

**1.** State the name or phonetic alphabet equivalent (location identifier) of a NAVAID when using it in a routing.

***EXAMPLE−***
*"V6 Victor Whiskey Victor (Waterville) V45 Jackson"*

**2.** When utilized as the clearance limit, state the name of the NAVAID followed by the type of NAVAID if the type is known.

***PHRASEOLOGY−***
*CLEARED TO (NAVAID name and type)*

***EXAMPLE−***
*"Cleared to Grand Rapids VOR"*

**b.** Describe radials, arcs, courses, bearings, and quadrants of NAVAIDs as follows:

**1.** VOR/VORTAC/TACAN/GPS Waypoint. State the name of the NAVAID or GPS Waypoint followed by the separate digits of the radial/azimuth/bearing (omitting the word "degrees") and the word "radial/azimuth/bearing."

***EXAMPLE−***
*"Appleton Zero Five Zero Radial."*

**2.** Arcs about VOR-DME/VORTAC/TACAN NAVAIDs. State the distance in miles from the NAVAID followed by the words "mile arc," the direction from the NAVAID in terms of the eight principal points of the compass, the word "of," and the name of the NAVAID.

***EXAMPLE−***
*"Two Zero mile arc southwest of Kirksville VOR"*

**3.** Quadrant within a radius of NAVAID. State direction from NAVAID in terms of the quadrant; e.g., NE, SE, SW, NW, followed by the distance in miles from the NAVAID.

***EXAMPLE–***
*"Cleared to fly northeast quadrant of Phillipsburg VORTAC within Four Zero mile radius."*

***REFERENCE–***
*FAAO JO 7110.65, Para 4–4–1, Route Use.*
*P/CG Term– Quadrant.*

**4.** Nondirectional beacons. State the course to or the bearing from the radio beacon, omitting the word "degree," followed by the words "course to" or "bearing from," the name of the radio beacon, and the words "radio beacon."

***EXAMPLE–***
*"Three Four Zero bearing from Randolph Radio Beacon."*

**5.** MLS. State the azimuth to or azimuth from the MLS, omitting the word "degree" followed by the words "azimuth to" or "azimuth from," the name of the MLS, and the term MLS.

***EXAMPLE–***
*"Two Six Zero azimuth to Linburgh Runway Two Seven MLS."*

**6.** Navigation Reference System (NRS) Waypoint. State the single letter corresponding to the ICAO Flight Information Region (FIR) identifier, followed by the letter corresponding to the FIR subset (ARTCC area for the conterminous U.S.), the latitude increment in single digit or group form, and the longitude increment.

***EXAMPLE–***
*"Kilo Delta Three Four Uniform."*
*"Kilo Delta Thirty Four Uniform."*

## 2–5–3. NAVAID FIXES

Describe fixes determined by reference to a radial/localizer/azimuth and distance from a VOR-DME/VORTAC/TACAN/ILS-DME as follows:

**a.** When a fix is not named, state the name of the NAVAID followed by a specified radial/localizer/azimuth, and state the distance in miles followed by the phrase "mile fix."

***EXAMPLE–***
*"Appleton Zero Five Zero radial Three Seven mile fix."*
*"Reno localizer back course Four mile fix."*

**b.** When a fix is charted on a SID, STAR, en route chart, or approach plate, state the name of the fix.

**c.** Use specific terms to describe a fix. Do not use expressions such as "passing Victor Twelve" or "passing J Eleven."

# Section 6. Weather Information

## 2−6−1. FAMILIARIZATION

Become familiar with pertinent weather information when coming on duty, and stay aware of current weather information needed to perform ATC duties.

## 2−6−2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)

Controllers must advise pilots of hazardous weather that may impact operations within 150 NM of their sector or area of jurisdiction. Hazardous weather information contained in HIWAS broadcasts includes Airmen's Meteorological Information (AIRMET), Significant Meteorological Information (SIGMET), Convective SIGMET (WST), Urgent Pilot Weather Reports (UUA), and Center Weather Advisories (CWA). Facilities must review alert messages to determine the geographical area and operational impact for hazardous weather information broadcasts. The broadcast is not required if aircraft on your frequency(s) will not be affected.

**a.** Controllers within commissioned HIWAS areas must broadcast a HIWAS alert on all frequencies, except emergency frequency, upon receipt of hazardous weather information. Controllers are required to disseminate data based on the operational impact on the sector or area of control jurisdiction.

***NOTE−***
*The inclusion of the type and number of weather advisory responsible for the HIWAS advisory is optional.*

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION (SIGMET, Convective SIGMET, AIRMET, Urgent Pilot Weather Report (UUA), or Center Weather Advisory (CWA), Number or Numbers) FOR (geographical area) AVAILABLE ON HIWAS OR FLIGHT SERVICE FREQUENCIES.*

**b.** Controllers outside of commissioned HIWAS areas must:

**1.** Advise pilots of the availability of hazardous weather advisories. Pilots requesting additional information should be directed to contact the nearest Flight Service.

**2.** Apply the same procedure when HIWAS outlets, or outlets with radio coverage extending into your sector or airspace under your jurisdiction, are out of service.

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION FOR (geographical area) AVAILABLE FROM FLIGHT SERVICE.*

**c.** Terminal facilities have the option to limit hazardous weather information broadcasts as follows: Tower cab and approach control facilities may opt to broadcast hazardous weather information alerts only when any part of the area described is within 50 NM of the airspace under their jurisdiction.

***REFERENCE−***
*AIM, Chapter 7, Section 1, Meteorology, Para 7−1−5 through Para 7−1−9.*

**d.** *EN ROUTE*. ERAM. Controllers must electronically acknowledge hazardous weather information messages after appropriate action has been taken.

***NOTE−***
*EN ROUTE. While hazardous weather information is commonly distributed via the SIGMET View, it is possible to receive the information via the GI View.*

## 2−6−3. PIREP INFORMATION

Significant PIREP information includes reports of strong frontal activity, squall lines, thunderstorms, light to severe icing, wind shear and turbulence (including clear air turbulence) of moderate or greater intensity, volcanic eruptions and volcanic ash clouds, detection of sulfur gases ($SO_2$ or $H_2S$) in the cabin, and other conditions pertinent to flight safety.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−1−8, Low Level Wind Shear/Microburst Advisories.*
*FAAO JO 7210.3, Para 6−3−1, Handling of SIGMETs, CWAs, and PIREPs.*
*AIM, Para 7−5−9, Flight Operations in Volcanic Ash.*
*FAAO JO 7210.3, Para 10−3−1, SIGMET and PIREP Handling.*

**a.** Solicit PIREPs when requested or when one of the following conditions exists or is forecast for your area of jurisdiction:

**1.** Ceilings at or below 5,000 feet. These PIREPs must include cloud base/top reports when feasible.

*TERMINAL*. Ensure that at least one descent/climb-out PIREP, including cloud base/s, top/s, and other related phenomena, is obtained each hour.

*EN ROUTE*. When providing approach control services, the requirements stated in TERMINAL above apply.

**2.** Visibility (surface or aloft) at or less than 5 miles.

**3.** Thunderstorms and related phenomena.

**4.** Turbulence of moderate degree or greater.

**5.** Icing of light degree or greater.

**6.** Wind shear.

**7.** Volcanic ash clouds.

***NOTE−***
*Pilots may forward PIREPs regarding volcanic activity using the format described in the Volcanic Activity Reporting Form (VAR) as depicted in the AIM, Appendix 2.*

**8.** Detection of sulfur gases ($SO_2$ or $H_2S$), associated with volcanic activity, in the cabin.

***NOTE−***
*The smell of sulfur gases in the cockpit may indicate volcanic activity that has not yet been detected or reported and/or possible entry into an ash-bearing cloud. $SO_2$ is identifiable as the sharp, acrid odor of a freshly struck match. $H_2S$ has the odor of rotten eggs.*

**9.** *TERMINAL*. Braking Action Advisories are in effect.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−3−5 Braking Action Advisories.*
*P/CG Term− Braking Action Advisories.*

**b.** Record with the PIREPs:

**1.** Time.

**2.** Aircraft position.

**3.** Type aircraft.

**4.** Altitude.

**5.** When the PIREP involves icing include:

**(a)** Icing type and intensity.

**(b)** Air temperature in which icing is occurring.

**c.** Obtain PIREPs directly from the pilot, or if the PIREP has been requested by another facility, you may instruct the pilot to deliver it directly to that facility.

***PHRASEOLOGY−***
*REQUEST/SAY FLIGHT CONDITIONS.*

*Or if appropriate,*

*REQUEST/SAY (specific conditions; i.e., ride, cloud, visibility, etc.) CONDITIONS.*

*If necessary,*

*OVER (fix),*

*or*

*ALONG PRESENT ROUTE,*

*or*

*BETWEEN (fix) AND (fix).*

**d.** Handle PIREPs as follows:

**1.** Relay pertinent PIREP information to concerned aircraft in a timely manner.

**2.** *EN ROUTE*. Relay all operationally significant PIREPs to the facility weather coordinator.

**3.** *TERMINAL*. Relay all operationally significant PIREPs to:

**(a)** The appropriate intrafacility positions.

**(b)** The FSS serving the area in which the report was obtained.

***NOTE−***
*The FSS is responsible for long line dissemination.*

**(c)** Other concerned terminal or en route ATC facilities, including non−FAA facilities.

**(d)** Use the word *gain* and/or *loss* when describing to pilots the effects of wind shear on airspeed.

***EXAMPLE−***
*"Delta Seven Twenty−one, a Boeing Seven Twenty−seven, previously reported wind shear, loss of Two Five knots at Four Hundred feet."*

*"U.S. Air Seventy−six, a D−C Niner, previously reported wind shear, gain of Twenty−Five knots between Niner Hundred and Six Hundred feet, followed by a loss of Five Zero knots between Five Hundred feet and the surface."*

***REFERENCE−***
*AIM, Para 7−1−24, Wind Shear PIREPs.*

## 2−6−4. WEATHER AND CHAFF SERVICES

**a.** Issue pertinent information on observed/reported weather and chaff areas by defining the area of coverage in terms of azimuth (by referring to the 12-hour clock) and distance from the aircraft or by indicating the general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.

***NOTE−***
*Weather significant to the safety of aircraft includes such conditions as funnel cloud activity, lines of thunderstorms, embedded thunderstorms, large hail, wind shear, microbursts, moderate to extreme turbulence (including CAT), and light to severe icing.*

***REFERENCE−***
*AIM, Paragraph 7-1-14, ATC Inflight Weather Avoidance Assistance.*

***PHRASEOLOGY−***
*WEATHER/CHAFF AREA BETWEEN (number)O'CLOCK AND (number) O'CLOCK (number) MILES,*

*or*

*(number) MILE BAND OF WEATHER/CHAFF FROM (fix or number of miles and direction from fix) TO (fix or number of miles and direction from fix).*

**b.** Inform any tower for which you provide approach control services of observed precipitation on radar which is likely to affect their operations.

**c.** Use the term "precipitation" when describing radar−derived weather. Issue the precipitation intensity from the lowest descriptor (LIGHT) to the highest descriptor (EXTREME) when that information is available. Do not use the word "turbulence" in describing radar−derived weather.

**1.** LIGHT.

**2.** MODERATE.

**3.** HEAVY.

**4.** EXTREME.

***NOTE−***
*Weather and Radar Processor (WARP) does not display light intensity.*

***PHRASEOLOGY−***
*AREA OF (Intensity) PRECIPITATION BETWEEN (number) O'CLOCK AND (number) O'CLOCK, (number) MILES, MOVING (direction) AT (number) KNOTS, TOPS (altitude). AREA IS (number) MILES IN DIAMETER.*

***EXAMPLE−***
**1.** *"Area of extreme precipitation between eleven o'clock and one o'clock, one zero miles moving east at two zero knots, tops flight level three niner zero."*

**2.** *"Area of heavy precipitation between ten o'clock and two o'clock, one five miles. Area is two five miles in diameter."*

**3.** *"Area of heavy to extreme precipitation between ten o'clock and two o'clock, one five miles. Area is two five miles in diameter."*

***REFERENCE−***
*P/CG Term− Precipitation Radar Weather Descriptions.*

**d.** When precipitation intensity information is not available.

***PHRASEOLOGY−***
*AREA OF PRECIPITATION BETWEEN (number) O'CLOCK AND (number) O'CLOCK, (number) MILES. MOVING (direction) AT (number) KNOTS, TOPS (altitude). AREA IS (number) MILES IN DIAMETER, INTENSITY UNKNOWN.*

***EXAMPLE−***
*"Area of precipitation between one o'clock and three o'clock, three five miles moving south at one five knots, tops flight level three three zero. Area is three zero miles in diameter, intensity unknown."*

***NOTE−***
*Phraseology using precipitation intensity descriptions is only applicable when the radar precipitation intensity information is determined by NWS radar equipment or NAS ground based digitized radar equipment with weather capabilities. This precipitation may not reach the surface.*

**e.** *EN ROUTE.* When issuing Air Route Surveillance Radar (ARSR) precipitation intensity use the following:

**1.** Describe the lowest displayable precipitation intensity as MODERATE.

**2.** Describe the highest displayable precipitation intensity as HEAVY to EXTREME.

***PHRASEOLOGY−***
*AREA OF (Intensity) PRECIPITATION BETWEEN (number) O'CLOCK and (number) O'CLOCK, (number) MILES, MOVING (direction) AT (number) KNOTS, TOPS (altitude). AREA IS (number) MILES IN DIAMETER.*

***EXAMPLE−***
**1.** *"Area of moderate precipitation between ten o'clock and one o'clock, three zero miles moving east at two zero knots, tops flight level three seven zero.*

**2.** *"Area of moderate precipitation between ten o'clock and three o'clock, two zero miles. Area is two five miles in diameter."*

**f.** When operational/equipment limitations exist, controllers must ensure that the highest available level of precipitation intensity within their area of jurisdiction is displayed.

**g.** When requested by the pilot, provide radar navigational guidance and/or approve deviations around weather or chaff areas. In areas of significant weather, plan ahead and be prepared to suggest, upon pilot request, the use of alternative routes/altitudes.

**1.** An approval for lateral deviation authorizes the pilot to maneuver left or right within the limits of the lateral deviation area.

***REFERENCE–***
*AIM, Paragraph 7-1-14b, 1. (a) ATC Inflight Weather Avoidance Assistance*

**2.** When approving a weather deviation for an aircraft that had previously been issued a crossing altitude, including Climb Via or Descend Via clearances, issue an altitude to maintain along with the clearance to deviate. If you intend on clearing the aircraft to resume the procedure, advise the pilot.

***PHRASEOLOGY–***
*DEVIATION (restrictions if necessary) APPROVED, MAINTAIN (altitude), (if applicable) EXPECT TO RESUME (SID, STAR, etc.) AT (NAVAID, fix, waypoint)*

***NOTE–***
*After a Climb Via or Descend Via clearance has been issued, a vector/deviation off of a SID/STAR cancels the altitude restrictions on the procedure. The aircraft's Flight Management System (FMS) may be unable to process crossing altitude restrictions once the aircraft leaves the SID/STAR lateral path. Without an assigned altitude, the aircraft's FMS may revert to leveling off at the altitude set by the pilot, which may be the SID/STAR's published top or bottom altitude.*

***REFERENCE–***
*FAAO JO 7110.65, Para 4-2-5, Route or Altitude Amendments*
*FAAO JO 7110.65, Para 5-6-2, Methods*

**3.** If a pilot enters your area of jurisdiction already deviating for weather, advise the pilot of any additional pertinent weather which may affect his route.

**4.** If traffic and airspace (i.e., special use airspace boundaries, LOA constraints) permit, combine the approval for weather deviation with a clearance on course.

***PHRASEOLOGY–***
*DEVIATION (restrictions if necessary) APPROVED, WHEN ABLE, PROCEED DIRECT (name of NAVAID/WAYPOINT/FIX)*
*or*
*DEVIATION (restrictions if necessary) APPROVED, WHEN ABLE, FLY HEADING (degrees), VECTOR TO JOIN (airway) AND ADVISE.*

***EXAMPLE–***
**1.** *"Deviation twenty degrees right approved, when able proceed direct O'Neill VORTAC and advise."*
*En Route: The corresponding fourth line entry is "D20R/ONL" or "D20R/F."*

**2.** *"Deviation 30 degrees left approved, when able fly heading zero niner zero, vector join J324 and advise."*
*En Route: In this case the free text character limitation prevents use of fourth line coordination and verbal coordination is required.*

**5.** If traffic or airspace prevent you from clearing the aircraft on course at the time of the approval for a weather deviation, instruct the pilot to advise when clear of weather.

***PHRASEOLOGY–***
*DEVIATION (restrictions if necessary) APPROVED, ADVISE CLEAR OF WEATHER.*

***EXAMPLE–***
*"Deviation North of course approved, advise clear of weather."*
*En Route: In this case the corresponding fourth line entry is "DN," and the receiving controller must provide a clearance to rejoin the route in accordance with paragraph 2-1-15 c.*

**h.** When a deviation cannot be approved as requested because of traffic, take an alternate course of action that provides positive control for traffic resolution and satisfies the pilot's need to avoid weather.

***PHRASEOLOGY–***
*UNABLE DEVIATION, FLY HEADING (heading), ADVISE CLEAR OF WEATHER*
*or*
*UNABLE DEVIATION, TURN (number of degrees) DEGREES (left or right)FOR TRAFFIC, ADVISE CLEAR OF WEATHER,*

***EXAMPLE–***
*"Unable deviation, turn thirty degrees right vector for traffic, advise clear of weather."*

**i.** When forwarding weather deviation information, the transferring controller must clearly coordinate the nature of the route guidance service being provided. This coordination should include, but is not limited to: assigned headings, suggested headings, pilot-initiated deviations. Coordination can be accomplished by: verbal, automated, or pre-arranged procedures. Emphasis should be made between: controller assigned headings, suggested headings, or pilot initiated deviations.

***EXAMPLE–***
*"(call sign) assigned heading 330 for weather avoidance"*
*"(call sign) deviating west, pilot requested…"*

*REFERENCE−*
*FAA Order JO 7110.65 2-1-14 Coordinate Use Of Airspace*
*FAA Order JO 7110.65 5-4-5 Transferring Controller Handoff*
*FAA Order JO 7110.65 5-4-6 Receiving Controller Handoff*
*FAA Order JO 7110.65 5-4-10 Prearranged Coordination*
*FAA Order JO 7110.65 5-4-11 En Route Fourth Line Data Block Usage*

**j.** En Route Fourth Line Data Transfer

**1.** The inclusion of a NAVAID, waypoint, or /F in the fourth line data indicates that the pilot has been authorized to deviate for weather and must rejoin the route at the next NAVAID or waypoint in the route of flight.

*REFERENCE−*
*FAA Order JO 7110.65 5-4-11 En Route Fourth Line Data Block Usage*

***EXAMPLE−***
*"Deviation twenty degrees right approved, when able proceed direct O'Neill VORTAC and advise."* In this case, the corresponding fourth line entry is "D20R/ONL" or "D20R/F."

**2.** The absence of a NAVAID, waypoint, or /F in the fourth line indicates that:

**(a)** The pilot has been authorized to deviate for weather only, and the receiving controller must provide a clearance to rejoin the route in accordance with paragraph 2-1-15c.

***EXAMPLE−***
*"Deviation twenty degrees right approved, advise clear of weather."*

**(b)** The free text character limitation prevents the use of fourth line coordination. Verbal coordination is required.

***EXAMPLE−***
*"Deviation 30 degrees left approved, when able fly heading zero niner zero, vector join J324 and advise."*

**k.** The supervisory traffic management coordinator-in-charge/operations supervisor/controller-in-charge shall verify the digitized radar weather information by the best means available (e.g., pilot reports, local tower personnel, etc.) if the weather data displayed by digitized radar is reported as questionable or erroneous. Errors in weather radar presentation shall be reported to the technical operations technician and the air traffic supervisor shall determine if the digitized radar derived weather data is to be displayed and a NOTAM distributed.

***NOTE−***
*Anomalous propagation (AP) is a natural occurrence affecting radar and does not in itself constitute a weather circuit failure.*

## 2−6−5. CALM WIND CONDITIONS

*TERMINAL.* Describe the wind as calm when the wind velocity is less than three knots.

*REFERENCE−*
*FAAO JO 7110.65, Para 3−5−3, Tailwind Components.*
*FAAO JO 7110.65, Para 3−10−4, Intersecting Runway/Intersecting Flight Path Separation.*

## 2−6−6. REPORTING WEATHER CONDITIONS

**a.** When the prevailing visibility at the usual point of observation, or at the tower level, is less than 4 miles, tower personnel must take prevailing visibility observations and apply the observations as follows:

**1.** Use the lower of the two observations (tower or surface) for aircraft operations.

**2.** Forward tower visibility observations to the weather observer.

**3.** Notify the weather observer when the tower observes the prevailing visibility decrease to less than 4 miles or increase to 4 miles or more.

**b.** Forward current weather changes to the appropriate control facility as follows:

**1.** When the official weather changes to a condition which is below 1,000−foot ceiling or below the highest circling minimum, whichever is greater, or less than 3 miles visibility, and when it improves to a condition which is better than those above.

**2.** Changes which are classified as special weather observations during the time that weather conditions are below 1,000−foot ceiling or the highest circling minimum, whichever is greater, or less than 3 miles visibility.

**c.** Towers at airports where military turbo-jet en route descents are routinely conducted must also report the conditions to the ARTCC even if it is not the controlling facility.

**d.** If the receiving facility informs you that weather reports are not required for a specific time period, discontinue the reports. The time period specified should not exceed the duration of the receiving controller's tour of duty.

**e.** *EN ROUTE.* When you determine that weather reports for an airport will not be required for a specific time period, inform the FSS or tower of this determination. The time period specified should not exceed the duration of receiving controller's tour of duty.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−10−2, Forwarding Approach Information by Nonapproach Control Facilities.*

## 2−6−7. DISSEMINATING WEATHER INFORMATION

*TERMINAL.* Observed elements of weather information must be disseminated as follows:

**a.** General weather information, such as "large breaks in the overcast," "visibility lowering to the south," or similar statements which do not include specific values, and any elements derived directly from instruments, pilots, or radar may be transmitted to pilots or other ATC facilities without consulting the weather reporting station.

**b.** Specific values, such as ceiling and visibility, may be transmitted if obtained by one of the following means:

**1.** You are properly certificated and acting as official weather observer for the elements being reported.

***NOTE−***
*USAF controllers do not serve as official weather observers.*

**2.** You have obtained the information from the official observer for the elements being reported.

**3.** The weather report was composed or verified by the weather station.

**4.** The information is obtained from an official Automated Weather Observation System (AWOS) or an Automated Surface Observation System (ASOS).

**c.** Differences between weather elements observed from the tower and those reported by the weather station must be reported to the official observer for the element concerned.

# Section 9. Automatic Terminal Information Service Procedures

## 2−9−1. APPLICATION

Use the ATIS, where available, to provide advance noncontrol airport/terminal area and meteorological information to aircraft.

**a.** Identify each ATIS message by a phonetic letter code word at both the beginning and the end of the message. Automated systems will have the phonetic letter code automatically appended. Exceptions may be made where omissions are required because of special programs or equipment.

**1.** Each alphabet letter phonetic word must be used sequentially, except as authorized in subpara a2, beginning with "Alpha," ending with "Zulu," and repeated without regard to the beginning of a new day. Identify the first resumed broadcast message with "Alpha" or the first assigned alphabet letter word in the event of a broadcast interruption of more than 12 hours.

**2.** Specific sequential portions of the alphabet may be assigned between facilities or an arrival and departure ATIS when designated by a letter of agreement or facility directive.

***REFERENCE−***
*FAAO JO 7210.3, Para 10−4−1, Automatic Terminal Information Service (ATIS).*

**b.** The ATIS recording must be reviewed for completeness, accuracy, speech rate, and proper enunciation before being transmitted.

**c.** Arrival and departure messages, when broadcast separately, need only contain information appropriate for that operation.

## 2−9−2. OPERATING PROCEDURES

Maintain an ATIS message that reflects the most current arrival and departure information.

**a.** Make a new recording when any of the following occur:

**1.** Upon receipt of any new official weather regardless of whether there is or is not a change in values.

**2.** When runway braking action reports are received that indicate runway braking is worse than that which is included in the current ATIS broadcast.

**3.** When there is a change in any other pertinent data, such as runway change, instrument approach in use, new or canceled NOTAMs/PIREPs/HIWAS update, etc.

**b.** When a pilot acknowledges that he/she has received the ATIS broadcast, controllers may omit those items contained in the broadcasts if they are current. Rapidly changing conditions will be issued by ATC, and the ATIS will contain the following:

***EXAMPLE−***
*"Latest ceiling/visibility/altimeter/wind/(other conditions) will be issued by approach control/tower."*

**c.** Broadcast on all appropriate frequencies to advise aircraft of a change in the ATIS code/message.

**d.** Controllers must ensure that pilots receive the most current pertinent information. Ask the pilot to confirm receipt of the current ATIS information if the pilot does not initially state the appropriate ATIS code. Controllers must ensure that changes to pertinent operational information is provided after the initial confirmation of ATIS information is established. Issue the current weather, runway in use, approach information, and pertinent NOTAMs to pilots who are unable to receive the ATIS.

***EXAMPLE−***
*"Verify you have information ALPHA."*

*"Information BRAVO now current, visibility three miles."*

*"Information CHARLIE now current, Ceiling 1500 Broken."*

*"Information CHARLIE now current, advise when you have CHARLIE."*

### 2−9−3. CONTENT

Include the following in ATIS broadcast as appropriate:

**a.** Airport/facility name, phonetic letter code, time of weather sequence (UTC). Weather information consisting of wind direction and velocity, visibility, obstructions to vision, present weather, sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate and other pertinent remarks included in the official weather observation. Wind direction, velocity, and altimeter must be reported from certified direct reading instruments. Temperature and dew point should be reported from certified direct reading sensors when available. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.

***NOTE−***
*ASOS/AWOS is to be considered the primary source of wind direction, velocity, and altimeter data for weather observation purposes at those locations that are so equipped. The ASOS Operator Interface Device (OID) displays the magnetic wind as "MAG WND" in the auxiliary data location in the lower left−hand portion of the screen. Other OID displayed winds are true and are not to be used for operational purposes.*

**b.** Man−Portable Air Defense Systems (MANPADS) alert and advisory. Specify the nature and location of threat or incident, whether reported or observed and by whom, time (if known), and notification to pilots to advise ATC if they need to divert.

***EXAMPLE−***
**1.** *"MANPADS alert. Exercise extreme caution. MANPADS threat reported by TSA, Chicago area." "Advise on initial contact if you want to divert."*

**2.** *"MANPADS alert. Exercise extreme caution. MANPADS attack observed by tower one−half mile northwest of airfield at one−two−five−zero Zulu." "Advise on initial contact if you want to divert."*

***REFERENCE−***
*FAAO JO 7110.65, Para 10−2−13, MANPADS Alert.*
*FAAO JO 7210.3, Para 2−1−9, Handling MANPADS Incidents.*

**c.** Terminal facilities must include reported unauthorized laser illumination events on the ATIS broadcast for one hour following the last report. Include the time, location, altitude, color, and direction of the laser as reported by the pilot.

***PHRASEOLOGY−***
*UNAUTHORIZED LASER ILLUMINATION EVENT, (UTC time), (location), (altitude), (color), (direction).*

***EXAMPLE−***
*UNAUTHORIZED LASER ILLUMINATION EVENT, AT 0100z, 8 MILE FINAL RUNWAY 18R AT 3,000 FEET, GREEN LASER FROM THE SOUTHWEST.*

***REFERENCE−***
*FAAO JO 7110.65, Para 10−2−14, Unauthorized Laser Illumination of Aircraft.*
*FAAO JO 7210.3, Para 2−1−27, Reporting Unauthorized Laser Illumination of Aircraft.*

**d.** The ceiling/sky condition, visibility, and obstructions to vision may be omitted if the ceiling is above 5,000 feet and the visibility is more than 5 miles.

***EXAMPLE−***
*A remark may be made, "The weather is better than five thousand and five."*

**e.** Instrument/visual approach/es in use. Specify landing runway/s unless the runway is that to which the instrument approach is made. Before advertising non-precision approaches, priority should be given to available precision, then APV approaches.

**f.** Departure runway/s (to be given only if different from landing runway/s or in the instance of a "departure only" ATIS).

**g.** Taxiway closures which affect the entrance or exit of active runways, other closures which impact airport operations, other NOTAMs and PIREPs pertinent to operations in the terminal area. Inform pilots of where hazardous weather is occurring and how the information may be obtained. Include available information of known bird activity.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−22, Bird Activity Information.*

**h.** When a runway length has been temporarily or permanently shortened, ensure that the word "WARNING" prefaces the runway number, and that the word "shortened" is also included in the text of the message.

**1.** Available runway length, as stated in the NOTAM, must be included in the ATIS broadcast. This information must be broadcast for the duration of the construction project.

**2.** For permanently shortened runways, facilities must continue to broadcast this information for a minimum of 30 days or until the Chart Supplement U.S. has been updated, whichever is longer.

***PHRASEOLOGY−***
*WARNING, RUNWAY (number) HAS BEEN SHORTENED, (length in feet) FEET AVAILABLE.*

***EXAMPLE−***
*"Warning, Runway One-Zero has been shortened, niner-thousand eight hundred and fifty feet available."*

**i.** Runway braking action or friction reports when provided. Include the time of the report and a word describing the cause of the runway friction problem.

***PHRASEOLOGY−***
*RUNWAY (number) MU (first value, second value, third value) AT (time), (cause).*

***EXAMPLE−***
*"Runway Two Seven, MU forty−two, forty−one, twenty−eight at one zero one eight Zulu, ice."*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−3−5, Braking Action Advisories.*

**j.** Other optional information as local conditions dictate in coordination with ATC. This may include such items as VFR arrival frequencies, temporary airport conditions, LAHSO operations being conducted, or other perishable items that may appear only for a matter of hours or a few days on the ATIS message.

**k.** Low level wind shear/microburst when reported by pilots or is detected on a wind shear detection system.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−1−8, Low Level Wind Shear/Microburst Advisories.*

**l.** A statement which advises the pilot to read back instructions to hold short of a runway. The air traffic manager may elect to remove this requirement 60 days after implementation provided that removing the statement from the ATIS does not result in increased requests from aircraft for read back of hold short instructions.

**m.** Instructions for the pilot to acknowledge receipt of the ATIS message by informing the controller on initial contact.

***EXAMPLE−***
*"Boston Tower Information Delta. One four zero zero Zulu. Wind two five zero at one zero. Visibility one zero. Ceiling four thousand five hundred broken. Temperature three four. Dew point two eight. Altimeter three zero one zero. ILS−DME Runway Two Seven Approach in use. Departing Runway Two Two Right. Hazardous Weather Information for (geographical area) available on HIWAS or Flight Service Frequencies. Advise on initial contact you have Delta."*

# Section 10. Team Position Responsibilities

## 2−10−1. EN ROUTE OR OCEANIC SECTOR TEAM POSITION RESPONSIBILITIES

**a.** En Route or Oceanic Sector Team Concept and Intent: There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a sector. The team, as a whole, has responsibility for the safe and efficient operation of that sector.

**b.** *Terms.* The following terms will be used in en route facilities for the purpose of standardization:

**1.** *Sector.* The area of control responsibility (delegated airspace) of the en route sector team, and the team as a whole.

**2.** *Radar Position (R).* That position which is in direct communication with the aircraft and which uses radar information as the primary means of separation.

**3.** *Radar Associate (RA).* That position sometimes referred to as "D−Side" or "Manual Controller."

**4.** *Radar Coordinator Position (RC).* That position sometimes referred to as "Coordinator," "Tracker," or "Handoff Controller" (En Route).

**5.** *Radar Flight Data (FD).* That position commonly referred to as "Assistant Controller" or "A−Side" position.

**6.** *Nonradar Position (NR).* That position which is usually in direct communication with the aircraft and which uses nonradar procedures as the primary means of separation.

**c.** Primary responsibilities of the En Route Sector Team Positions:

**1.** ***Radar Position:***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Monitor and operate radios.

**(d)** Accept and initiate automated handoffs.

**(e)** Assist the radar associate position with nonautomated handoff actions when needed.

**(f)** Assist the radar associate position in coordination when needed.

**(g)** Scan radar display. Correlate with flight progress strip information or EDST data, as applicable.

**(h)** Ensure computer entries are completed on instructions or clearances you issue or receive.

**(i)** Ensure strip marking and/or electronic flight data entries are completed on instructions or clearances you issue or receive.

**(j)** Adjust equipment at radar position to be usable by all members of the team.

**(k)** The radar controller must not be responsible for G/G communications when precluded by VSCS split functionality.

**(l)** At ERAM facilities, ensure the situation display accurately reflects the status of all SAAs that impact their area of control responsibility.

**2.** ***Radar Associate Position:***

**(a)** Ensure separation.

**(b)** Where available, use EDST to plan, organize, and expedite the flow of traffic.

**(c)** Initiate control instructions.

**(d)** Operate interphones.

**(e)** Accept and initiate nonautomated handoffs, and ensure radar position is made aware of the actions.

**(f)** Assist the radar position by accepting or initiating automated handoffs which are necessary for the continued smooth operation of the sector, and ensure that the radar position is made immediately aware of any action taken.

**(g)** Coordinate, including pointouts.

**(h)** Monitor radios when not performing higher priority duties.

**(i)** Scan flight progress strips and/or EDST data. Correlate with radar data.

**(j)** Manage flight progress strips and/or electronic flight data.

**(k)** Ensure computer entries are completed on instructions issued or received. Enter instructions issued or received by the radar position when aware of those instructions.

**(l)** As appropriate, ensure strip marking and/or EDST data entries are completed on instructions issued or received, and record instructions issued or received by the radar position when aware of them.

**(m)** Adjust equipment at radar associate position to be usable by all members of the team.

**(n)** Where authorized, perform EDST data entries to keep the activation status of designated Airspace Configuration Elements current.

**(o)** At ERAM facilities, scan the radar associate display for electronically distributed information, evaluate the information, and take action as appropriate.

**3.** ***Radar Coordinator Position:***

**(a)** Perform interfacility/intrafacility/sector/position coordination of traffic actions.

**(b)** Advise the radar position and the radar associate position of sector actions required to accomplish overall objectives.

**(c)** Perform any of the functions of the en route sector team which will assist in meeting situation objectives.

**(d)** The RC controller must not be responsible for monitoring or operating radios when precluded by VSCS split functionality.

***NOTE−***
*The Radar Position has the responsibility for managing the overall sector operations, including aircraft separation and traffic flows. The Radar Coordinator Position assumes responsibility for managing traffic flows and the Radar Position retains responsibility for aircraft separation when the Radar Coordinator Position is staffed.*

**4.** ***Radar Flight Data:***

**(a)** Operate interphone.

**(b)** Assist Radar Associate Position in managing flight progress strips.

**(c)** Receive/process and distribute flight progress strips.

**(d)** Ensure flight data processing equipment is operational, except for EDST capabilities.

**(e)** Request/receive and disseminate weather, NOTAMs, NAS status, traffic management, and Special Use Airspace status messages.

**(f)** Manually prepare flight progress strips when automation systems are not available.

**(g)** Enter flight data into computer.

**(h)** Forward flight data via computer.

**(i)** Assist facility/sector in meeting situation objectives.

**5.** ***En Route Nonradar Position:***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Monitor and operate radios.

**(d)** Accept and initiate transfer of control, communications, and flight data.

**(e)** Ensure computer entries are completed on instructions or clearances issued or received.

**(f)** Ensure strip marking is completed on instructions or clearances issued or received.

**(g)** Facilities utilizing nonradar positions may modify the standards contained in the radar associate, radar coordinator, and radar flight data sections to accommodate facility/sector needs, i.e., nonradar coordinator, nonradar data positions.

## 2−10−2. TERMINAL RADAR/NONRADAR TEAM POSITION RESPONSIBILITIES

**a.** *Terminal Radar Team Concept and Intent:* There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector.

**b.** *Terms.* The following terms will be used in terminal facilities for the purposes of standardization.

**1.** *Facility/Sector.* The area of control responsibility (delegated airspace) of the radar team, and the team as a whole.

**2.** *Radar Position (R).* That position which is in direct communication with the aircraft and which uses radar information as the primary means of separation.

**3.** *Radar Associate Position (RA).* That position commonly referred to as "Handoff Controller" or "Radar Data Controller."

**4.** *Radar Coordinator Position (RC).* That position commonly referred to as "Coordinator," "Tracker," "Sequencer," or "Overhead."

**5.** *Radar Flight Data (FD).* That position commonly referred to as "Flight Data."

**6.** *Nonradar Position (NR).* That position which is usually in direct communication with the aircraft and which uses nonradar procedures as the primary means of separation.

**c.** Primary Responsibilities of the Terminal Radar Team Positions:

**1.** ***Radar Position:***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Monitor and operate radios.

**(d)** Accept and initiate automated handoffs.

**(e)** Assist the Radar Associate Position with nonautomated handoff actions when needed.

**(f)** Assist the Radar Associate Position in coordination when needed.

**(g)** Scan radar display. Correlate with flight progress strip information.

**(h)** Ensure computer entries are completed on instructions or clearances you issue or receive.

**(i)** Ensure strip marking is completed on instructions or clearances you issue or receive.

**(j)** Adjust equipment at Radar Position to be usable by all members of the team.

**2.** ***Radar Associate Position:***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Operate interphones.

**(d)** Maintain awareness of facility/sector activities.

**(e)** Accept and initiate nonautomated handoffs.

**(f)** Assist the Radar Position by accepting or initiating automated handoffs which are necessary for the continued smooth operation of the facility/sector and ensure that the Radar Position is made immediately aware of any actions taken.

**(g)** Coordinate, including point outs.

**(h)** Scan flight progress strips. Correlate with radar data.

**(i)** Manage flight progress strips.

**(j)** Ensure computer entries are completed on instructions issued or received, and enter instructions issued or received by the Radar Position when aware of those instructions.

**(k)** Ensure strip marking is completed on instructions issued or received, and write instructions issued or received by the Radar Position when aware of them.

**(l)** Adjust equipment at Radar Associate Position to be usable by all members of the Radar Team.

**3.** ***Radar Coordinator Position:***

**(a)** Perform interfacility/sector/position coordination of traffic actions.

**(b)** Advise the Radar Position and the Radar Associate Position of facility/sector actions required to accomplish overall objectives.

**(c)** Perform any of the functions of the Radar Team which will assist in meeting situation objectives.

***NOTE−***
*The Radar Position has the responsibility of managing the overall sector operations, including aircraft separation and traffic flows. The Radar Coordinator Position assumes responsibility for managing traffic flows and the Radar Position retains responsibility for aircraft separation when the Radar Coordinator Position is staffed.*

**4.** ***Radar Flight Data:***

**(a)** Operate interphones.

**(b)** Process and forward flight plan information.

**(c)** Compile statistical data.

**(d)** Assist facility/sector in meeting situation objectives.

**5.** ***Terminal Nonradar Position:***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Monitor and operate radios.

**(d)** Accept and initiate transfer of control, communications and flight data.

**(e)** Ensure computer entries are completed on instructions or clearances issued or received.

**(f)** Ensure strip marking is completed on instructions or clearances issued or received.

**(g)** Facilities utilizing nonradar positions may modify the standards contained in the radar associate, radar coordinator, and radar flight data sections to accommodate facility/sector needs, i.e., nonradar coordinator, nonradar data positions.

## 2−10−3. TOWER TEAM POSITION RESPONSIBILITIES

**a.** *Tower Team Concept and Intent:* There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector.

**b.** *Terms:* The following terms will be used in terminal facilities for the purpose of standardization.

**1.** *Tower Cab:* The area of control responsibility (delegated airspace and/or airport surface areas) of the tower team, and the team as a whole.

**2.** *Tower Position(s) (LC or GC):* That position which is in direct communications with the aircraft and ensures separation of aircraft in/on the area of jurisdiction.

**3.** *Tower Associate Position(s):* That position commonly referred to as "Local Assist," "Ground Assist," "Local Associate," or "Ground Associate."

**4.** *Tower Cab Coordinator Position (CC):* That position commonly referred to as "Coordinator."

**5.** *Flight Data (FD):* That position commonly referred to as "Flight Data."

**6.** *Clearance Delivery (CD):* That position commonly referred to as "Clearance."

**c.** Primary responsibilities of the Tower Team Positions:

**1.** ***Tower Position(s) (LC or GC):***

**(a)** Ensure separation.

**(b)** Initiate control instructions.

**(c)** Monitor and operate communications equipment.

**(d)** Utilize tower radar display(s).

**(e)** Utilize alphanumerics.

**(f)** Assist the Tower Associate Position with coordination.

**(g)** Scan tower cab environment.

**(h)** Ensure computer entries are completed for instructions or clearances issued or received.

**(i)** Ensure strip marking is completed for instructions or clearances issued or received.

**(j)** Process and forward flight plan information.

**(k)** Perform any functions of the Tower Team which will assist in meeting situation objectives.

**2.** ***Tower Associate Position(s):***

**(a)** Ensure separation.

**(b)** Operate interphones.

**(c)** Maintain awareness of tower cab activities.

**(d)** Utilize alphanumerics.

**(e)** Utilize tower radar display(s).

**(f)** Assist Tower Position by accepting/initiating coordination for the continued smooth operation of the tower cab and ensure that the Tower Position is made immediately aware of any actions taken.

**(g)** Manage flight plan information.

**(h)** Ensure computer entries are completed for instructions issued or received and enter instructions issued or received by a Tower Position.

**(i)** Ensure strip marking is completed for instructions issued or received and enter instructions issued or received by a Tower Position.

**3.** ***Tower Coordinator Position:***

**(a)** Perform interfacility/position coordination for traffic actions.

**(b)** Advise the tower and the Tower Associate Position(s) of tower cab actions required to accomplish overall objectives.

**(c)** Perform any of the functions of the Tower Team which will assist in meeting situation objectives.

***NOTE−***
*The Tower Positions have the responsibility for aircraft separation and traffic flows. The Tower Coordinator Position assumes responsibility for managing traffic flows and the Tower Positions retain responsibility for aircraft separation when the Tower Coordinator Position is staffed.*

**4.** ***Flight Data:***

**(a)** Operate interphones.

**(b)** Process and forward flight plan information.

**(c)** Compile statistical data.

**(d)** Assist tower cab in meeting situation objectives.

**(e)** Observe and report weather information.

**(f)** Utilize alphanumerics.

**5.** ***Clearance Delivery:***

**(a)** Operate communications equipment.

**(b)** Process and forward flight plan information.

**(c)** Issue clearances and ensure accuracy of pilot read back.

**(d)** Assist tower cab in meeting situation objectives.

**(e)** Operate tower equipment.

**(f)** Utilize alphanumerics.

***NOTE−***
*The Tower Positions have the responsibility for aircraft separation and traffic flows. The Tower Coordinator Position assumes responsibility for managing traffic flows and the Tower Positions retain responsibility for aircraft separation when the Tower Coordinator Position is staffed.*

# Section 3. Airport Conditions

## 3−3−1. LANDING AREA CONDITION

If you observe or are informed of any condition which affects the safe use of a landing area:

*NOTE−*
**1.** *The airport management/military operations office is responsible for observing and reporting the condition of the landing area.*

**2.** *It is the responsibility of the agency operating the airport to provide the tower with current information regarding airport conditions.*

**3.** *A disabled aircraft on a runway, after occupants are clear, is normally handled by flight standards and airport management/military operations office personnel in the same manner as any obstruction; e.g., construction equipment.*

**a.** Relay the information to the airport manager/military operations office concerned.

**b.** Copy verbatim any information received and record the name of the person submitting it.

**c.** Confirm information obtained from other than authorized airport or FAA personnel unless this function is the responsibility of the military operations office.

*NOTE−*
*Civil airport managers are required to provide a list of airport employees who are authorized to issue information concerning conditions affecting the safe use of the airport.*

**d.** If you are unable to contact the airport management or operator, issue a NOTAM publicizing an unsafe condition and inform the management or operator as soon as practicable.

*EXAMPLE−*
*"DISABLED AIRCRAFT ON RUNWAY."*

*NOTE−*
**1.** *Legally, only the airport management/military operations office can close a runway.*

**2.** *Military controllers are not authorized to issue NOTAMs. It is the responsibility of the military operations office.*

**e.** Issue to aircraft only factual information, as reported by the airport management concerning the condition of the runway surface, describing the accumulation of precipitation.

*EXAMPLE−*
*"ALL RUNWAYS COVERED BY COMPACTED SNOW SIX INCHES DEEP."*

*REFERENCE−*
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*

## 3−3−2. CLOSED/UNSAFE RUNWAY INFORMATION

If an aircraft requests to takeoff, land, or touch-and-go on a closed or unsafe runway, inform the pilot the runway is closed or unsafe, and

**a.** If the pilot persists in his/her request, quote him/her the appropriate parts of the NOTAM applying to the runway and inform him/her that a clearance cannot be issued.

**b.** Then, if the pilot insists and in your opinion the intended operation would not adversely affect other traffic, inform him/her that the operation will be at his/her own risk.

*PHRASEOLOGY−*
*RUNWAY (runway number) CLOSED/UNSAFE.*

*If appropriate, (quote NOTAM information),*

*UNABLE TO ISSUE DEPARTURE/LANDING/TOUCH−AND−GO CLEARANCE.*
*DEPARTURE/LANDING/TOUCH−AND−GO WILL BE AT YOUR OWN RISK.*

**c.** Except as permitted by para 4−8−7, Side-step Maneuver, where parallel runways are served by separate ILS systems and one of the runways is closed, the ILS associated with the closed runway should not be used for approaches unless not using the ILS would have an adverse impact on the operational efficiency of the airport.

*REFERENCE−*
*FAAO JO 7110.65, Para 3−10−5, Landing Clearance.*
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*

## 3−3−3. TIMELY INFORMATION

Issue airport condition information necessary for an aircraft's safe operation in time for it to be useful to the pilot. Include the following, as appropriate:

**a.** Construction work on or immediately adjacent to the movement area.

**b.** Rough portions of the movement area.

**c.** Braking conditions caused by ice, snow, slush, or water.

**d.** Snowdrifts or piles of snow on or along the edges of the area and the extent of any plowed area.

**e.** Parked aircraft on the movement area.

**f.** Irregular operation of part or all of the airport lighting system.

**g.** Volcanic ash on any airport surface area and whether the ash is wet or dry (if known).

***NOTE−***
*Braking action on wet ash may be degraded. Dry ash on the runway may necessitate minimum use of reverse thrust.*

**h.** Other pertinent airport conditions.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*
*FAAO JO 7110.65, Para 2−1−9, Reporting Essential Flight Information.*
*FAAO JO 7110.65, Para 3−10−10, Altitude Restricted Low Approach.*

## 3−3−4. BRAKING ACTION

Furnish quality of braking action, as received from pilots or the airport management, to all aircraft as follows:

**a.** Describe the quality of braking action using the terms "good," "fair," "poor," "nil," or a combination of these terms. If the pilot or airport management reports braking action in other than the foregoing terms, ask him/her to categorize braking action in these terms.

***NOTE−***
*The term "nil" is used to indicate bad or no braking action.*

**b.** Include type of aircraft or vehicle from which the report is received.

***EXAMPLE−***
*"Braking action fair to poor, reported by a heavy D−C Ten."*
*"Braking action poor, reported by a Boeing Seven Twenty−Seven."*

**c.** If the braking action report affects only a portion of a runway, obtain enough information from the pilot or airport management to describe the braking action in terms easily understood by the pilot.

***EXAMPLE−***
*"Braking action poor first half of runway, reported by a Lockheed Ten Eleven."*
*"Braking action poor beyond the intersection of runway two seven, reported by a Boeing Seven Twenty−Seven."*

***NOTE−***
*Descriptive terms, such as the first or the last half of the runway, should normally be used rather than landmark descriptions, such as opposite the fire station, south of a taxiway, etc. Landmarks extraneous to the landing runway are difficult to distinguish during low visibility, at night, or anytime a pilot is busy landing an aircraft.*

**d.** Furnish runway friction measurement readings/values as received from airport management to aircraft as follows:

**1.** Furnish information as received from the airport management to pilots on the ATIS at locations where friction measuring devices, such as MU−Meter, Saab Friction Tester (SFT), and Skiddometer are in use only when the MU values are 40 or less. Use the runway followed by the MU number for each of the three runway segments, time of report, and a word describing the cause of the runway friction problem. Do not issue MU values when all three segments of the runway have values reported greater than 40.

***EXAMPLE−***
*"Runway two seven, MU forty−two, forty−one, twenty−eight at one zero one eight Zulu, ice."*

**2.** Issue the runway surface condition and/or the Runway Condition Reading (RCR), if provided, to all USAF and ANG aircraft. Issue the RCR to other aircraft upon pilot request.

***EXAMPLE−***
*"Ice on runway, RCR zero five, patchy."*

***NOTE−***
**1.** *USAF has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of the RCR code is dependent upon the pilot's having a "stopping capability chart" specifically applicable to his/her aircraft.*

**2.** *USAF offices furnish RCR information at airports serving USAF and ANG aircraft.*

***REFERENCE−***
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*
*FAAO JO 7110.65, Para 3−3−5, Braking Action Advisories.*

## 3−3−5. BRAKING ACTION ADVISORIES

**a.** When runway braking action reports are received from pilots or the airport management which include the terms "fair," "poor," or "nil" or whenever weather conditions are conducive to deteriorating or rapidly changing runway conditions, include on the ATIS broadcast the statement "Braking Action Advisories are in effect."

***REFERENCE−***
*FAAO JO 7210.3, Para 10−4−1, Automatic Terminal Information Service (ATIS).*

**b.** During the time Braking Action Advisories are in effect, take the following action:

**1.** Issue the latest braking action report for the runway in use to each arriving and departing aircraft early enough to be of benefit to the pilot. When possible, include reports from super or heavy aircraft when the arriving or departing aircraft is a super or heavy.

**2.** If no report has been received for the runway of intended use, issue an advisory to that effect.

***PHRASEOLOGY−***
*NO BRAKING ACTION REPORTS RECEIVED FOR RUNWAY (runway number).*

**3.** Advise the airport management that runway braking action reports of "fair," "poor," or "nil" have been received.

***REFERENCE−***
*FAAO JO 7210.3, Para 4−3−1, Letters of Agreement.*

**4.** Solicit PIREPs of runway braking action.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−6−3, PIREP Information.*

**c.** Include runway friction measurement/values received from airport management on the ATIS. Furnish the information when requested by the pilot in accordance with para 3−3−4, Braking Action.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−9−3, Content.*
*FAAO JO 7110.65, Para 3−9−1, Departure Information.*
*FAAO JO 7110.65, Para 3−10−1, Landing Information.*
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*

## 3−3−6. ARRESTING SYSTEM OPERATION

**a.** For normal operations, arresting systems remotely controlled by ATC must remain in the retracted or down position.

***NOTE−***
**1.** *USN− Runway Arresting Gear− barriers are not operated by ATC personnel. Readiness/rigging of the equipment is the responsibility of the operations department.*

**2.** *A request to raise a barrier or hook cable means the barrier or cable on the departure end of the runway. If an approach end engagement is required, the pilot or military authority will specifically request that the approach end cable be raised.*

***REFERENCE−***
*FAAO JO 7610.4, Chapter 9, Section 3. Aircraft Arresting System, Single Frequency Approach (SFA), Simulated Flameout (SFO)/Emergency Landing Pattern (ELP) Operations, Celestial Navigation (CELNAV) Training, Para 9−3−1 through Para 9−3−8.*

**b.** Raise aircraft arresting systems whenever:

**1.** Requested by a pilot.

***NOTE−***
*The standard emergency phraseology for a pilot requesting an arresting system to be raised for immediate engagement is:*

*"BARRIER − BARRIER − BARRIER"*

*or*

*"CABLE − CABLE − CABLE."*

**2.** Requested by military authority; e.g., airfield manager, supervisor of flying, mobile control officer, etc.

***NOTE−***
*USAF. Web barriers at the departure end of the runway may remain in the up position when requested by the senior operational commander. The IFR Enroute Supplement and AP-1 will describe specific barrier configuration. ATC will advise transient aircraft of the barrier configuration using the phraseology in subpara c , below.*

**3.** A military jet aircraft is landing with known or suspected radio failure or conditions (drag chute/hydraulic/electrical failure, etc.) that indicate an arresting system may be needed. Exceptions are authorized for military aircraft which cannot engage an arresting system (C−9, C−141, C−5, T−39, etc.) and should be identified in a letter of agreement and/or appropriate military directive.

**c.** When requested by military authority due to freezing weather conditions or malfunction of the activating mechanism, the barrier/cable may remain in a raised position provided aircraft are advised.

***PHRASEOLOGY−***
*YOUR DEPARTURE/LANDING WILL BE TOWARD/OVER A RAISED BARRIER/CABLE ON RUNWAY (number), (location, distance, as appropriate).*

**d.** Inform civil and U.S. Army aircraft whenever rubber supported cables are in place at the approach end of the landing runway, and include the distance of the cables from the threshold. This information may be omitted if it is published in the "Notices to Airmen" publication/DOD FLIP.

***EXAMPLE−***
*"Runway One Four arresting cable one thousand feet from threshold."*

**e.** When arresting system operation has been requested, inform the pilot of the indicated barrier/cable position.

***PHRASEOLOGY−***
*(Identification), BARRIER/CABLE INDICATES UP/DOWN. CLEARED FOR TAKEOFF/TO LAND.*

**f.** Time permitting, advise pilots of the availability of all arresting systems on the runway in question when a pilot requests barrier information.

**g.** If an aircraft engages a raised barrier/cable, initiate crash alarm procedures immediately.

**h.** For preplanned practice engagements not associated with emergencies, crash alarm systems need not be activated if, in accordance with local military operating procedures, all required notifications are made before the practice engagement.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*

## 3−3−7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT

**a.** To meet the demand for more facilities capable of operating under CAT III weather, Type II equipment is being upgraded to Integrity Level 3. This integrity level will support operations which place a high degree of reliance on ILS guidance for positioning through touchdown.

**b.** Installation of the FFM remote status indicating units is necessary to attain the integrity necessary to meet internationally agreed upon reliability values in support of CAT III operations on Type II ILS equipment. The remote status indicating unit used in conjunction with Type II equipment adds a third integrity test; thereby, producing an approach aid which has integrity capable of providing Level 3 service.

**c.** The remote status sensing unit, when installed in the tower cab, will give immediate indications of localizer out-of-tolerance conditions. The alarm in the FFM remote status sensing unit indicates an inoperative or an out-of-tolerance localizer signal; e.g., the course may have shifted due to equipment malfunction or vehicle/aircraft encroachment into the critical area.

**d.** Operation of the FFM remote sensing unit will be based on the prevailing weather. The FFM remote sensing unit must be operational when the weather is below CAT I ILS minimums.

**e.** When the remote status unit indicates that the localizer FFM is in alarm (aural warning following the preset delay) and:

**1.** The aircraft is outside the middle marker (MM) or in the absence of a MM, ½ mile final, check for encroachment of those portions of the critical area that can be seen from the tower. It is understood that the entire critical area may not be visible due to low ceilings and poor visibility. The check is strictly to determine possible causal factors for the out-of-tolerance situation. If the alarm has not cleared prior to the aircraft's arriving at the MM or in the absence of a MM, ½ mile final, immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable.

**2.** The aircraft is between the MM or ½ mile final and the inner marker (IM), or if the IM is not installed, the CAT II Missed Approach Point (MAP), immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable.

***PHRASEOLOGY−***
*CAUTION, MONITOR INDICATES RUNWAY (number) LOCALIZER UNRELIABLE.*

**3.** The aircraft has passed the IM or the CAT II MAP (if the IM is not installed) there is no action requirement. Although the FFM has been modified with filters which dampen the effect of false alarms, you may expect alarms when aircraft are located between the FFM and the localizer antenna either on landing or on takeoff.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−7−12, Airport Conditions.*

# Section 7. Taxi and Ground Movement Procedures

## 3−7−1. GROUND TRAFFIC MOVEMENT

Issue by radio or directional light signals specific instructions which approve or disapprove the movement of aircraft, vehicles, equipment, or personnel on the movement area except where permitted in an LOA.

***REFERENCE−***
*FAAO JO 7210.3, Para 4−3−1, Letters of Agreement*
*FAAO JO 7210.3, Para 4−3−2, Appropriate Subjects*

**a.** Do not issue *conditional* instructions that are dependent upon the movement of an arrival aircraft on or approaching the runway or a departure aircraft established on a takeoff roll. Do not say, "Line up and wait behind landing traffic," or "Taxi/proceed across Runway Three−Six behind departing/landing Citation." The above requirements do not preclude issuing instructions to follow an aircraft observed to be operating on the movement area in accordance with an ATC clearance/instruction and in such a manner that the instructions to follow are not ambiguous.

**b.** Do not issue unconditional instructions when authorizing movement on a runway/taxiway for the purpose of airfield checks or other airport operations. Instructions must ensure positive control with specific instructions to proceed on a runway or movement area, and as necessary, hold short instructions.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−1−3, USE OF ACTIVE RUNWAYS*
*FAAO JO 7110.65, Para 3−7−2, TAXI AND GROUND MOVEMENT OPERATIONS*

***EXAMPLE−***
*"Airport 1, proceed on Runway 26R, hold short of Runway 18L."*

*"(Tower), Airport 1 at taxiway B8, request to inspect Runway 26R." "Airport 1 proceed as requested, hold short of Runway 18L."*

*"Airport 1 proceed on taxi way B, hold short of Runway 18L."*

***NOTE−***
*The following are examples of unconditional instructions and are not approved for use: "THE FIELD IS YOURS," "CLEARED ON ALL SURFACES," "THE AIRPORT IS YOURS," and "PROCEED ON ALL RUNWAYS AND TAXIWAYS."*

**c.** Do not use the word "cleared" in conjunction with authorization for aircraft to taxi or equipment/vehicle/personnel operations. Use the prefix "taxi," "proceed," or "hold," as appropriate, for aircraft instructions and "proceed" or "hold" for equipment/vehicles/personnel.

**d.** Intersection departures may be initiated by a controller or a controller may authorize an intersection departure if a pilot requests. Issue the measured distance from the intersection to the runway end rounded "down" to the nearest 50 feet to any pilot who requests and to all military aircraft, unless use of the intersection is covered in appropriate directives.

***NOTE−***
**1.** *Exceptions are authorized where specific military aircraft routinely make intersection takeoffs and procedures are defined in appropriate directives. The authority exercising operational control of such aircraft ensures that all pilots are thoroughly familiar with these procedures, including the usable runway length from the applicable intersection.*

**2.** *Some airports publish "declared distances" for a particular runway. These are published in the Chart Supplement U.S. or the Aeronautical Information Publication (AIP) and there is no requirement that facility personnel be aware of them. These distances are a means of satisfying airport design criteria and are intended to be used by pilots and/or operators for preflight performance planning only. There are no special markings, signing, or lighting associated with declared distances and they do not limit the actual runway available for use by an aircraft. Therefore, they cannot be used for any air traffic control purpose. If pilots inquire about the existence of declared distances, refer them to the Chart Supplement U.S. or AIP.*

***PHRASEOLOGY−***
*RUNWAY (number) AT (taxiway designator) INTERSECTION DEPARTURE (remaining length) FEET AVAILABLE.*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−9−4 Line Up and Wait (LUAW).*

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

*REFERENCE–*
*FAAO JO 7210.3, Para 10-3-11, Airport Construction*
*FAAO JO 7210.3, Para 10-3-12, Change in Runway Length Due to Construction*

## 3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS

Issue the route for the aircraft/vehicle to follow on the movement area in concise and easy to understand terms. The taxi clearance must include the specific route to follow. When a taxi clearance to a runway is issued to an aircraft, confirm the aircraft has the correct runway assignment.

***NOTE–***
**1.** *A pilot's read back of taxi instructions with the runway assignment can be considered confirmation of runway assignment.*

**2.** *Movement of aircraft or vehicles on nonmovement areas is the responsibility of the pilot, the aircraft operator, or the airport management.*

**a.** When authorizing an aircraft/vehicle to proceed on the movement area or to any point other than assigned takeoff runway, specify the route/taxi instructions. If it is the intent to hold the aircraft/vehicle short of any given point along the taxi route, issue the route and then state the holding instructions.

***NOTE–***
**1.** *The absence of holding instructions authorizes an aircraft/vehicle to cross all taxiways that intersect the taxi route.*

**2.** *Movement of aircraft or vehicles on non–movement areas is the responsibility of the pilot, the aircraft operator, or the airport management.*

***PHRASEOLOGY–***
*HOLD POSITION.*

*HOLD FOR (reason)*

*CROSS (runway/taxiway)*

*or*

*TAXI/CONTINUE TAXIING/PROCEED/VIA (route),*

*or*

*ON (runway number or taxiways, etc.),*

*or*

*TO (location),*

*or*

*(direction),*

*or*

*ACROSS RUNWAY (number).*

*or*

*VIA (route), HOLD SHORT OF (location)*

*or*

*FOLLOW (traffic) (restrictions as necessary)*

*or*

*BEHIND (traffic).*

***EXAMPLE–***
*"Cross Runway Two–Eight Left, hold short of Runway Two–EightRight."*

*"Taxi/continue taxiing/proceed to the hangar."*

*"Taxi/continue taxiing/proceed straight ahead then via ramp to the hangar."*

*"Taxi/continue taxiing/proceed on Taxiway Charlie, hold short of Runway Two–Seven."*

*or*

*"Taxi/continue taxing/proceed on Charlie, hold short of Runway Two–Seven."*

**b.** When authorizing an aircraft to taxi to an assigned takeoff runway, state the departure runway followed by the specific taxi route. Issue hold short restrictions when an aircraft will be required to hold short of a runway or other points along the taxi route.

***NOTE–***
*If the specific taxi route ends into a connecting taxiway with the same identifier (for example, taxiway "A" connects with Taxiway "A1") at the approach end of the runway, the connecting taxiway may be omitted from the clearance.*

***PHRASEOLOGY–***
*RUNWAY (number), TAXI VIA (route as necessary).*

*or*

*RUNWAY (number), TAXI VIA (route as necessary)(hold short instructions as necessary)."*

(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 conditions are less than reported ceiling 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, ½ 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 conditions are less than reported ceiling 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 weather indicates a reported 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 Para 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 reported 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 reported 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. Their dimensions are described in FAAO 8260.3b, Volume III, Chapter 3, para 3.4, United States Standards for Terminal Instrument Procedures.*

**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 subparas 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).*

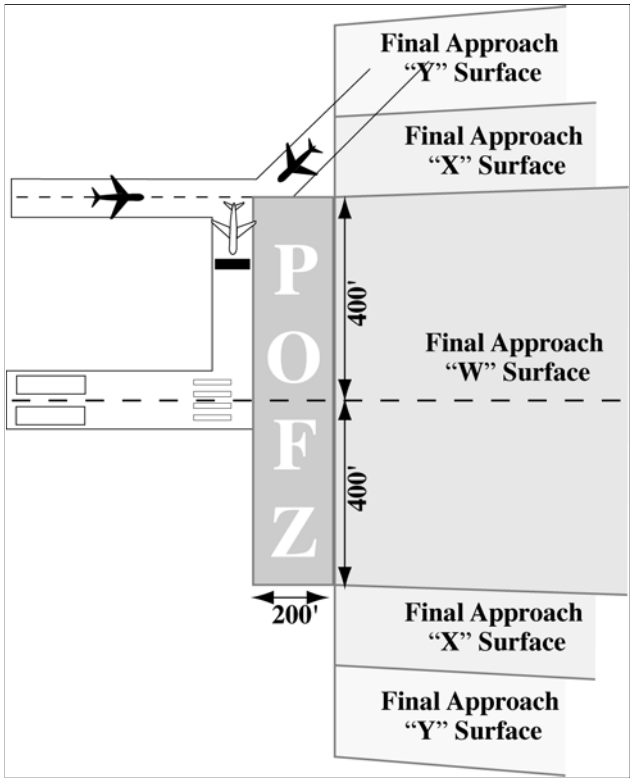
*TAXIING AIRCRAFT/VEHICLE LEFT/RIGHT OF RUNWAY.*

***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−***
*FAAO JO 7110.65, Para 3−1−6, Traffic Information.*

*FIG 3−7−1*
**Precision Obstacle Free Zone (POFZ)**



# Section 8. Spacing and Sequencing

## 3–8–1. SEQUENCE/SPACING APPLICATION

Establish the sequence of arriving and departing aircraft by requiring them to adjust flight or ground operation, as necessary, to achieve proper spacing.

***PHRASEOLOGY–***
*CLEARED FOR TAKEOFF.*

*CLEARED FOR TAKEOFF OR HOLD SHORT/HOLD IN POSITION/TAXI OFF THE RUNWAY (traffic).*

*EXTEND DOWNWIND.*

*MAKE SHORT APPROACH.*

*NUMBER (landing sequence number),*

*FOLLOW (description and location of traffic),*

*or if traffic is utilizing another runway,*

*TRAFFIC (description and location) LANDING RUNWAY (number of runway being used).*

*CIRCLE THE AIRPORT.*

*MAKE LEFT/RIGHT THREE–SIXTY/TWO SEVENTY.*

*GO AROUND (additional instructions as necessary).*

*CLEARED TO LAND.*

*CLEARED:*

*TOUCH–AND–GO,*
*or*

*STOP–AND–GO,*
*or*

*LOW APPROACH.*

*CLEARED FOR THE OPTION,*

*or*

*OPTION APPROVED,*

*or*

*UNABLE OPTION, (alternate instructions).*

*or*

*UNABLE (type of option), OTHER OPTIONS APPROVED.*

***NOTE–***
**1.** *The "Cleared for the Option" procedure will permit an instructor pilot/flight examiner/pilot the option to make a touch-and-go, low approach, missed approach, stop-and-go, or full stop landing. This procedure will only be used at those locations with an operational control tower and will be subject to ATC approval. After ATC approval of the option, the pilot should inform ATC as soon as possible of any delay on the runway during their stop-and-go or full stop landing.*

**2.** *For proper helicopter spacing, speed adjustments may be more practical than course changes.*

**3.** *Read back of hold short instructions apply when hold instructions are issued to a pilot in lieu of a takeoff clearance.*

***REFERENCE–***
*FAAO JO 7110.65, Para 3–7–2, Taxi and Ground Movement Operations.*
*AIM, Para 4–3–22, Option Approach*

## 3–8–2. TOUCH-AND-GO OR STOP-AND-GO OR LOW APPROACH

Consider an aircraft cleared for touch-and-go, stop-and-go, or low approach as an arriving aircraft until it touches down (for touch-and-go), or makes a complete stop (for stop-and-go), or crosses the landing threshold (for low approach), and thereafter as a departing aircraft.

***REFERENCE–***
*FAAO JO 7110.65, Para 3–1–5, Vehicles/Equipment/Personnel on Runways.*
*FAAO JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures.*

## 3–8–3. SIMULTANEOUS SAME DIRECTION OPERATION

Authorize simultaneous, same direction operations on parallel runways, on parallel landing strips, or on a runway and a parallel landing strip only when the following conditions are met:

**a.** Operations are conducted in VFR conditions unless visual separation is applied.

**b.** Two-way radio communication is maintained with the aircraft involved and pertinent traffic information is issued.

**c.** The distance between the runways or landing strips is in accordance with the minima in TBL 3−8−1 (use the greater minimum if two categories are involved).

*TBL 3−8−1*

**Same Direction Distance Minima**

| Aircraft category | Minimum distance (feet) between parallel | |
|---|---|---|
| | Runway centerlines | Edges of adjacent strips or runway and strip |
| Lightweight, single−engine, propeller driven | 300 | 200 |
| Twin−engine, propeller driven | 500 | 400 |
| All others | 700 | 600 |

## 3−8−4. SIMULTANEOUS OPPOSITE DIRECTION OPERATION

Authorize simultaneous opposite direction operations on parallel runways, on parallel landing strips, or on a runway and a parallel landing strip only when the following conditions are met:

**a.** Operations are conducted in VFR conditions.

**b.** Two-way radio communication is maintained with the aircraft involved and pertinent traffic information is issued.

***PHRASEOLOGY−***
*TRAFFIC (description) ARRIVING/DEPARTING/LOW APPROACH, OPPOSITE DIRECTION ON PARALLEL RUNWAY/LANDING STRIP.*

**c.** The distance between the runways or landing strips is in accordance with the minima in TBL 3−8−2.

*TBL 3−8−2*

**Opposite Direction Distance Minima**

| Type of Operation | Minimum distance (feet) between parallel | |
|---|---|---|
| | Runway centerlines | Edges of adjacent strips or runway and strip |
| Between sunrise and sunset | 1,400 | 1,400 |
| Between sunset and sunrise | 2,800 | Not authorized |

touch−and−go, stop−and−go, option, or unrestricted low approach on the same runway.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−10−5, Landing Clearance.*

**d.** When an aircraft is authorized to line up and wait, inform it of the closest traffic requesting a full−stop, touch−and−go, stop−and− go, option, or unrestricted low approach to the same runway.

***EXAMPLE−***
*"United Five, Runway One Eight, line up and wait. Traffic a Boeing Seven Thirty Seven, six mile final.*

**e.** *USAF/USN*. When an aircraft is authorized to line up and wait, 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 aircraft taxiing into position.

**f.** Do not authorize an aircraft to line up and wait when the departure point is not visible from the tower, unless the aircraft's position can be verified by ASDE or the runway is used for departures only.

**g.** An aircraft may be authorized to line up and wait at an intersection between sunset and sunrise under the following conditions:

**1.** The procedure must be approved by the appropriate Director, Terminal Operations (service area) as well as the Director, Terminal Safety and Operations Support.

**2.** The procedure must be contained in a facility directive.

**3.** The runway must be used as a departure−only runway.

**4.** Only one aircraft at a time is permitted to line up and wait on the same runway.

**5.** Document on FAA Form 7230−4, Daily Record of Facility Operation, the following: "LUAW at INT of RWY (number) and TWY (name) IN EFFECT" when using runway as a departure−only runway. "LUAW at INT of RWY (number) and TWY (name) SUSPENDED" when runway is not used as a departure−only runway.

**h.** Do not authorize an aircraft to line up and wait at anytime when the intersection is not visible from the tower.

**i.** Do not authorize aircraft to simultaneously line up and wait on the same runway, between sunrise and sunset, unless the local assist/local monitor position is staffed.

**j.** *USN*. Do not authorize aircraft to line up and wait simultaneously on intersecting runways.

***PHRASEOLOGY−***
*CONTINUE HOLDING,*

*or*

*TAXI OFF THE RUNWAY.*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−10−10, Altitude Restricted Low Approach.*

**k.** When aircraft are authorized to line up and wait on runways that intersect, traffic must be exchanged between that aircraft and the aircraft that is authorized to line up and wait, depart, or arrive to the intersecting runway(s).

***EXAMPLE−***
*"United Five, Runway Four, line up and wait, traffic holding Runway Three−One."*
*"Delta One, Runway Three−One, line up and wait, traffic holding Runway Four."*

*Or, when issuing traffic information to an arrival aircraft and an aircraft that is holding on runway(s) that intersect(s):*

*"Delta One, Runway Four, line up and wait, traffic landing Runway Three−One."*
*"United Five, Runway Three−One, cleared to land. Traffic holding in position Runway Four."*

*Or, when issuing traffic information to a departing aircraft and an aircraft that is holding on runway(s) that intersect(s):*

*"Delta One, Runway Three−One, line up and wait, traffic departing Runway Four."*
*"United Five, Runway Four, cleared for takeoff, traffic holding in position Runway Three−One."*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−9−8, Intersecting Runway/Intersecting Flight Path Operations.*
*FAAO JO 7110.65, Para 3−10−4, Intersecting Runway/Intersecting Flight Path Separation.*

**l.** When a local controller delivers or amends an ATC clearance to an aircraft awaiting departure and that aircraft is holding short of a runway or is holding in position on a runway, an additional clearance must be issued to prevent the possibility of the aircraft inadvertently taxiing onto the runway and/or beginning takeoff roll. In such cases, append one of the following ATC instructions as appropriate:

**1.** HOLD SHORT OF RUNWAY, *or*

**2.** HOLD IN POSITION.

**m.** *USAF/USN.* When issuing additional instructions or information to an aircraft holding in takeoff position, include instructions to continue holding or taxi off the runway, unless it is cleared for takeoff.

***PHRASEOLOGY−***
*CONTINUE HOLDING,*

*or*

*TAXI OFF THE RUNWAY.*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−10−10, Altitude Restricted Low Approach.*

**n.** When authorizing an aircraft to line up and wait at an intersection, state the runway intersection.

***PHRASEOLOGY−***
*RUNWAY (number) AT (taxiway designator), LINE UP AND WAIT.*

**o.** 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 authorizing that aircraft to line up and wait.

***PHRASEOLOGY−***
*RUNWAY (number), FULL−LENGTH, LINE UP AND WAIT.*

***EXAMPLE−***
*"American Four Eighty Two, Runway Three−Zero full length, line up and wait."*

***NOTE−***
*The controller need not state the location of the aircraft departing the full length of the runway if there are no aircraft holding for departure at an intersection for that same runway.*

**p.** 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 U.S. 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.*

**q.** Whenever a runway length has been temporarily or permanently shortened, state the word "shortened" immediately following the runway number as part of the line up and wait clearance.

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

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

***PHRASEOLOGY−***
*RUNWAY (number) SHORTENED, LINE UP AND WAIT.*

***EXAMPLE−***
*"Runway Two-Seven shortened, line up and wait."*

***REFERENCE−***
*FAAO JO 7210.3, Para 10-3-11, Airport Construction*
*FAAO JO 7210.3, Para 10-3-12, Change in Runway Length Due to Construction*

## 3−9−5. ANTICIPATING SEPARATION

Takeoff clearance needs not be withheld until prescribed separation exists if there is a reasonable assurance it will exist when the aircraft starts takeoff roll.

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

## 3−9−6. SAME RUNWAY SEPARATION

Separate a departing aircraft from a preceding departing or arriving aircraft using the same runway by ensuring that it does not begin takeoff roll until:

**a.** The other aircraft has departed and crossed the runway end or turned to avert any conflict. (See FIG 3−9−1.) If you can determine distances by reference to suitable landmarks, the other aircraft needs only be airborne if the following minimum distance exists between aircraft: (See FIG 3−9−2.)

**1.** When only Category I aircraft are involved− *3,000 feet.*

**2.** When a Category I aircraft is preceded by a Category II aircraft− *3,000 feet.*

**3.** When either the succeeding or both are Category II aircraft− *4,500 feet.*

**4.** When either is a Category III aircraft− *6,000 feet.*

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

*FIG 3-9-1*
**Same Runway Separation**
**[View 1]**

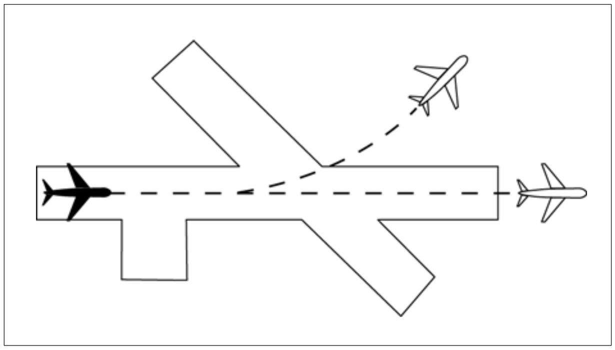
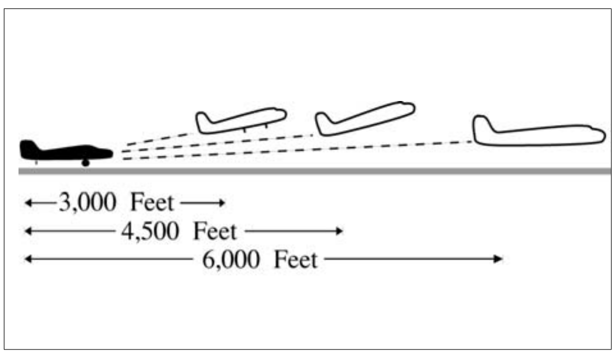


*FIG 3-9-2*
**Same Runway Separation**
**[View 2]**




***NOTE−***
*Aircraft same runway separation (SRS) categories are specified in Appendices A, B, and C and based upon the following definitions:*

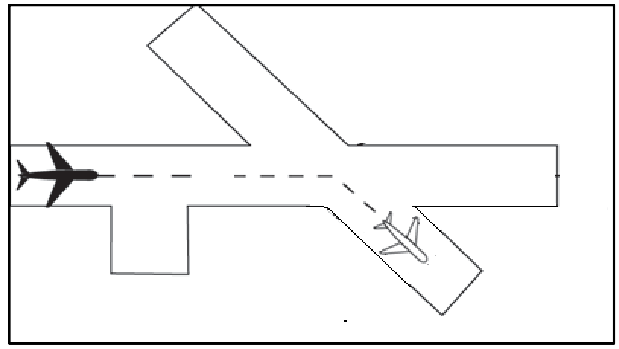
*CATEGORY I− small aircraft weighing 12,500 lbs. or less, with a single propeller driven engine, and all helicopters.*

*CATEGORY II− small aircraft weighing 12,500 lbs. or less, with propeller driven twin−engines.*

*CATEGORY III− all other aircraft.*

**b.** A preceding landing aircraft is clear of the runway. (See FIG 3−9−3.)

*FIG 3-9-3*
**Preceding Landing Aircraft Clear of Runway**



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

**WAKE TURBULENCE APPLICATION**

**c.** Do not issue clearances which imply or indicate approval of rolling takeoffs by super or heavy aircraft except as provided in Para 3−1−14, Ground Operations When Volcanic Ash is Present.

**d.** Do not issue clearances to a small aircraft to line up and wait on the same runway behind a departing super or heavy aircraft to apply the necessary intervals.

***REFERENCE−***
*AC 90−23, Aircraft Wake Turbulence.*

**e.** The minima in Para 5-5-4, Minima, subparagraph g, may be applied in lieu of the time interval requirements in subparagraphs f and g. When Para 5-5-4, Minima, is applied, ensure that the appropriate radar separation exists at or prior to the time an aircraft becomes airborne.

***NOTE−***
*The pilot may request additional separation, but should make this request before taxiing on the runway.*

**f.** Separate IFR/VFR aircraft taking off from the same runway or a parallel runway separated by less than 2,500 feet:

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

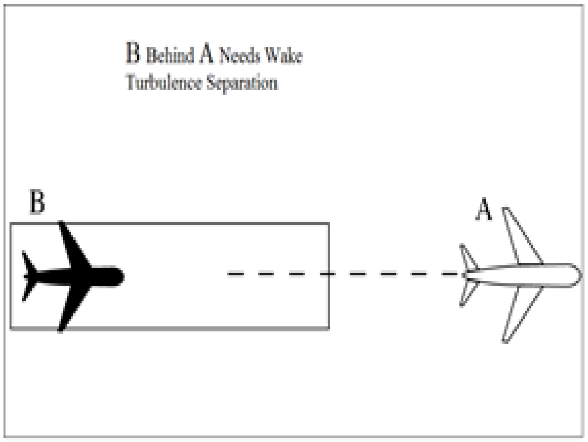
**1.** Heavy, large, or small behind super − *3 minutes.*

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

**g.** Separate a small aircraft behind a B757 by *2 minutes* when departing the same runway.

*FIG 3−9−4*

**Same Runway Separation**




**h.** Separate aircraft when operating on a runway with a displaced landing threshold if projected flight paths will cross when either a departure follows an arrival or an arrival follows a departure by the following minima:

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

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

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

**i.** Separate an aircraft behind another aircraft that has departed or made a low/missed approach when utilizing opposite direction takeoffs or landings on the same or parallel runways separated by less than 2,500 feet by the following minima:

**1.** Heavy, large, or small behind super − *4 minutes.*

**2.** Heavy, large, or small behind heavy − *3 minutes*

**j.** Separate a small aircraft behind a B757 that has departed or made a low/missed approach when utilizing opposite direction takeoffs or landings on the same runway by − *3 minutes.*

**k.** Do not approve pilot requests to deviate from the required intervals contained in subparagraphs f through j.

***PHRASEOLOGY−***
*HOLD FOR WAKE TURBULENCE.*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−9−7, Wake Turbulence Separation for Intersection Departures.*

**l.** Separate a small aircraft behind a large aircraft (except B757) that has departed or made a low/missed approach when utilizing opposite direction takeoffs on the same runway by *3 minutes* unless a pilot has initiated a request to deviate from the time interval. In the latter case, issue a wake turbulence cautionary advisory before clearing the aircraft for takeoff. Controllers must not initiate or suggest a waiver of the time interval.

***NOTE−***
*A request for takeoff does not initiate a waiver request.*

**m.** Inform aircraft when it is necessary to hold in order to provide the required time interval.

## 3−9−7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES

**a.** Apply the following wake turbulence criteria for intersection departures:

**1.** Separate a small aircraft weighing 12,500 lbs. or less taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing small aircraft weighing more than 12,500 lbs. by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

**2.** Separate a small aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing large aircraft (except B757) by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

**3.** Separate a small aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing B757 by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

**4.** Separate aircraft departing from an intersection on the same runway (same or opposite direction takeoff), parallel runways separated by less than 2,500 feet, and parallel runways separated by less than 2,500 feet with the runway thresholds offset by 500 feet or more, by ensuring that the aircraft does not start take-off roll until the following intervals exist after the preceding aircraft has taken off:

***REFERENCE−***
*FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.*

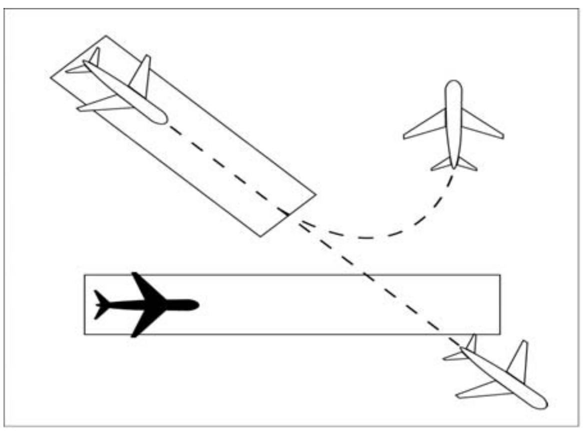
## 3−9−9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

**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−***
*FAAO 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 3−9−10).

***FIG 3−9−10***
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 3−9−11 and FIG 3-9-12).

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

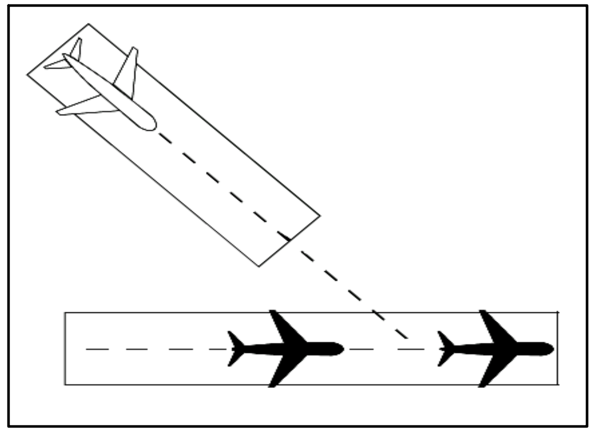
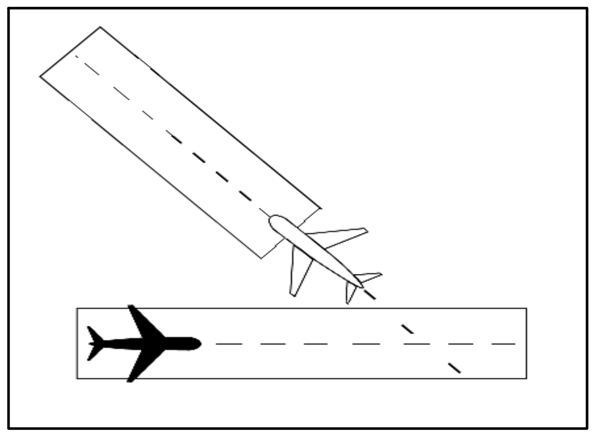


***FIG 3−9−12***
**Intersecting Runway Separation**



**b.** If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway within 1 NM of either departure end, apply the provisions of Paragraph 3-9-8, Intersecting runway/Intersecting Flight Path Operations. (See FIG 3-9-13 and FIG 3-9-14).

***REFERENCE−***
*FAAO JO 7210.3, Para 10-3-14, Go-Around/Missed Approach*

*FIG 3−9−13*
**Intersecting Runway Separation**

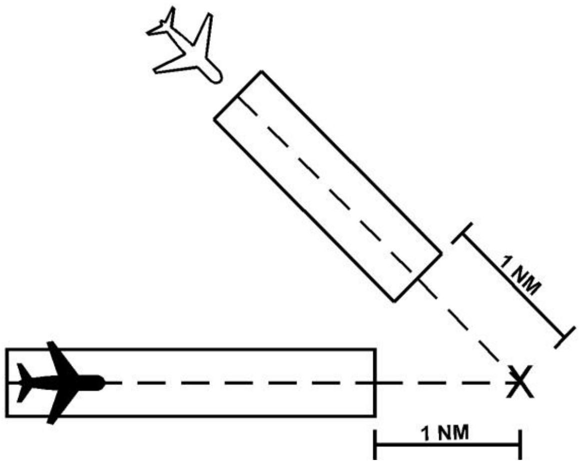
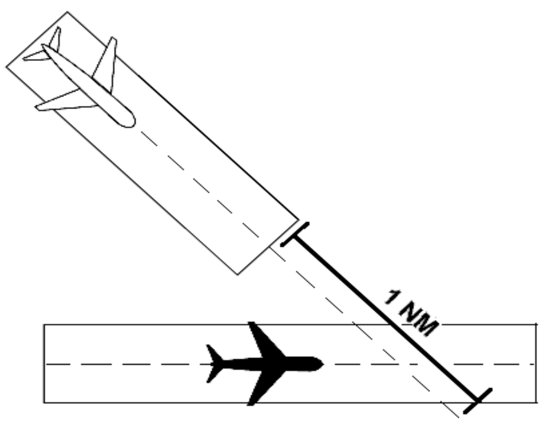



*FIG 3−9−14*
**Intersecting Runway Separation**




**WAKE TURBULENCE APPLICATION**

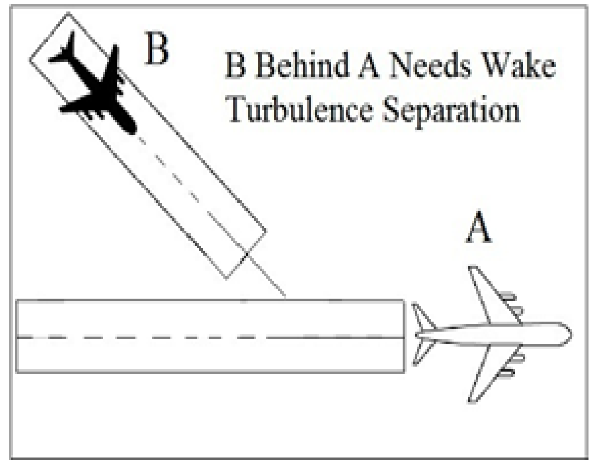
**c.** Separate IFR/VFR aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3−9−15 ):

**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 3−9−15*
**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.*

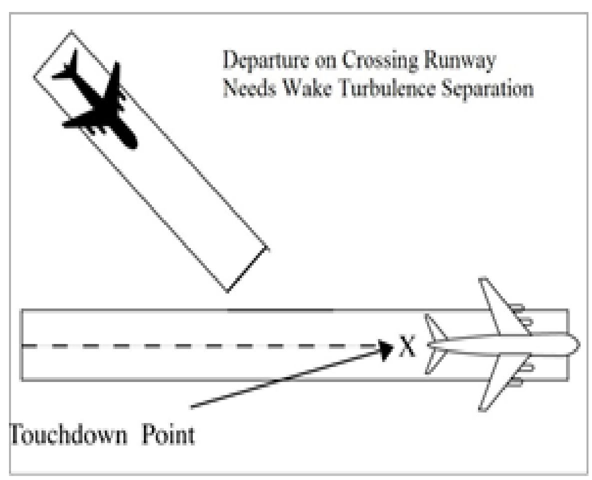
**d.** Separate IFR/VFR aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3−9−15 ):

**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 3−9−16*
**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−***
*FAAO JO 7110.65, Para 5-8-3, Successive or Simultaneous Departures.*
*FAAO JO 7110.65, Para 5-8-5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways.*
*FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph 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−***
*FAAO 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.*

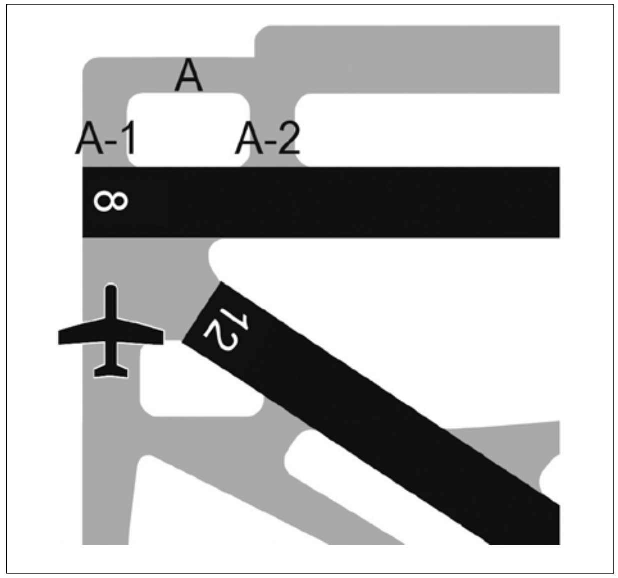
**c.** When two or more aircraft call the tower ready for departure, one or more at the full length of a runway and one or more at an intersection, state the location of the aircraft at the full length of the runway when clearing that aircraft for takeoff.

***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 para 3−9−9e.

***FIG 3−9−17***
**Runway/Taxiway Proximity**

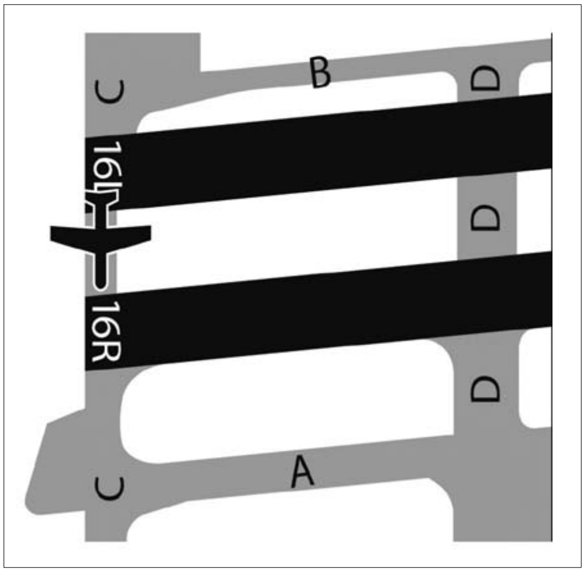



**e.** At those airports where the airport configuration does not allow for an aircraft to completely cross one runway and hold short of the departure runway and/or where airports do not have runway hold markings between runways, state the runway to be crossed with the takeoff clearance if the aircraft 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 3−9−18*
**Runway/Taxiway Proximity**




***REFERENCE−***
*FAAO JO 7210.3, Para 10−3−9, 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 U.S. 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 U.S. 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 Juliet, intersection departure shortened, cleared for takeoff."*

***REFERENCE−***
*FAAO JO 7210.3, Para 10-3-11, Airport Construction*
*FAAO JO 7210.3, Para 10-3-12, 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).*

clearance, full−stop, touch−and−go, stop−and−go, option, or unrestricted low approach to an arriving aircraft with an aircraft holding in position or taxiing to LUAW on the same runway except when reported weather conditions are less than ceiling 800 feet or visibility less than 2 miles.

**c.** Inform the closest aircraft that is requesting a full−stop, touch−and−go, stop−and−go, option, or unrestricted low approaches when there is traffic authorized to line up and wait 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."*

**d.** 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.*

**e.** 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 U.S. 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."*

**f.** 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−***
*FAAO JO 7210.3, Para 10-3-11, Airport Construction*
*FAAO JO 7210.3, Para 10-3-12, 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 paragraph 3−10−5b2. 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−***
*FAAO 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 not less than 500 feet above the airport may be authorized except over an aircraft in takeoff position or a departure 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 in takeoff position or departing aircraft.*

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

***REFERENCE–***
*FAAO JO 7110.65, Para 3−1−5, Vehicles/Equipment/Personnel on Runways.*
*FAAO JO 7110.65, Para 3−1−6, Traffic Information.*
*FAAO JO 7110.65, Para 3−2−1, Light Signals.*
*FAAO JO 7110.65, Para 3−3−3, Timely Information.*
*FAAO JO 7110.65, Para 3−9−4, Line Up and Wait (LUAW).*
*FAAO 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–***
*FAAO JO 7110.65, Para 3−7−4, Runway Proximity.*
*FAAO JO 7110.65, Para 3−9−4, Line Up and Wait (LUAW).*
*FAAO 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.

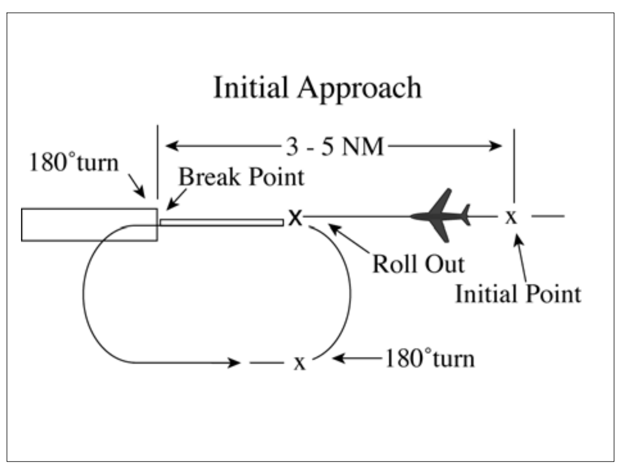
***PHRASEOLOGY–***
*BREAK AT (specified point).*

*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 cancelled 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 3−10−13***
**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 3−10−14 and FIG 3−10−16.)

**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 3−10−14 and FIG 3−10−16.)

*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−*
*FAAO JO 7110.65, Para 4−8−12, Low Approach and Touch-and-Go.*
*FAAO JO 7610.4, Para 9−3−7, 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−*
*FAAO JO 7110.65, Para 3−8−1, Sequence/Spacing Application.*
*FAAO JO 7110.65, Para 10−1−7, Inflight Emergencies Involving Military Fighter-type Aircraft.*
*FAAO JO 7610.4, Para 9−3−7, 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 3−10−15.)

*FIG 3-10-14*
**Simulated Flameout [1]**

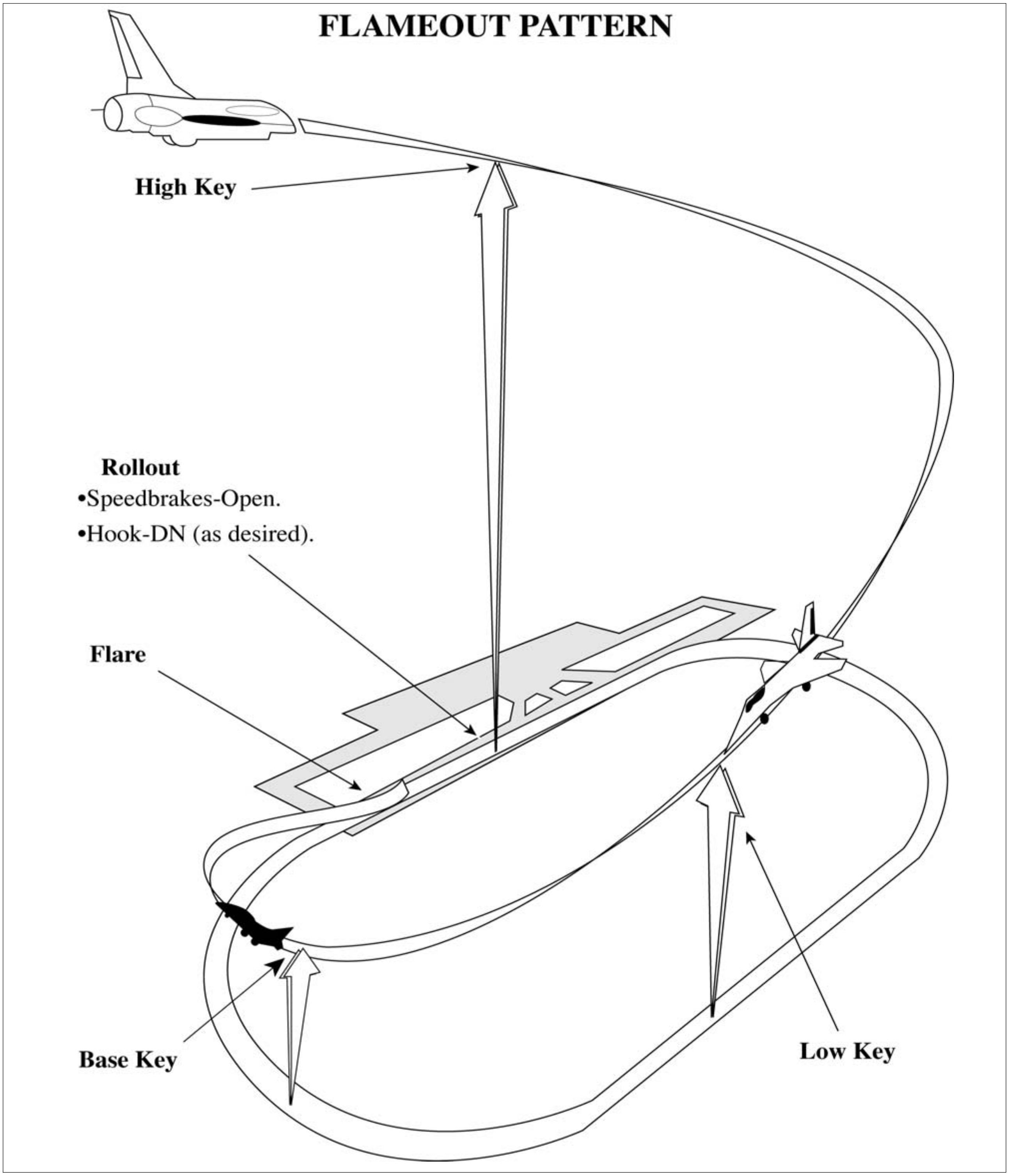


*FIG 3-10-15*
**Simulated Flameout [2]**

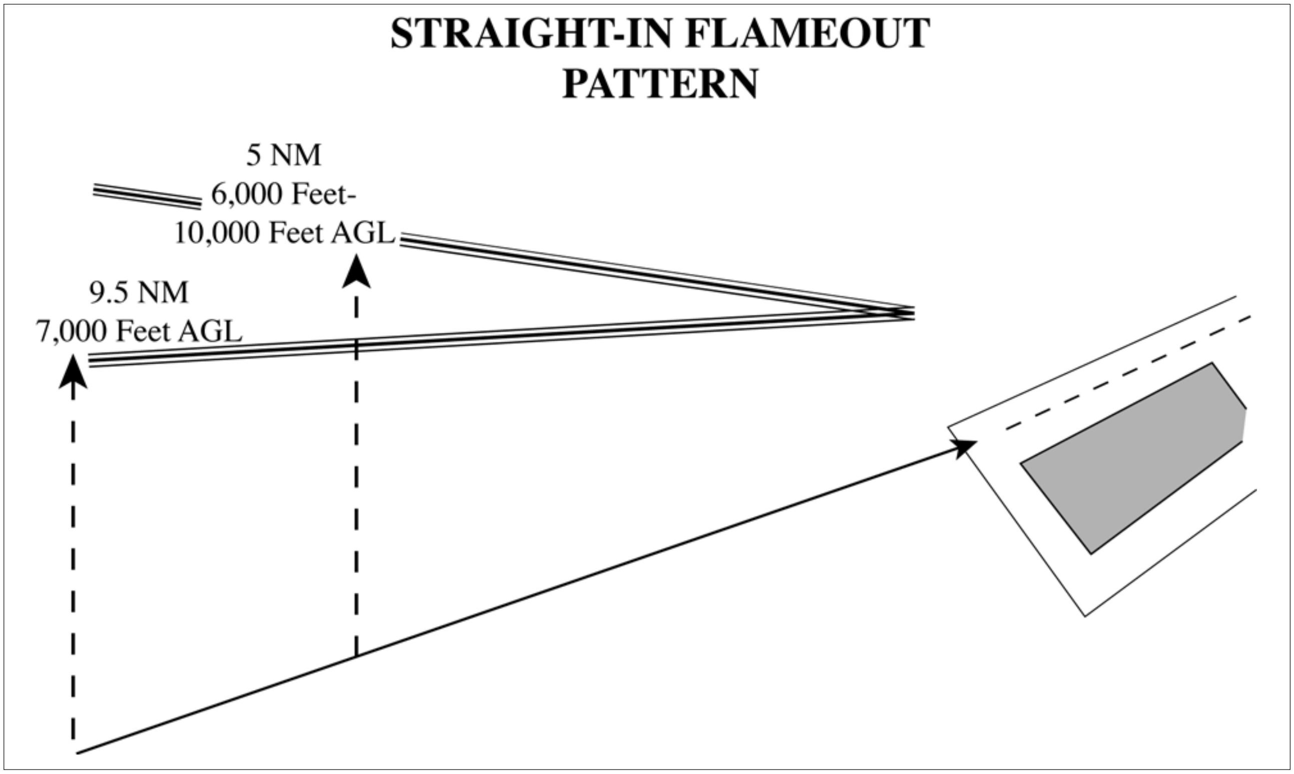
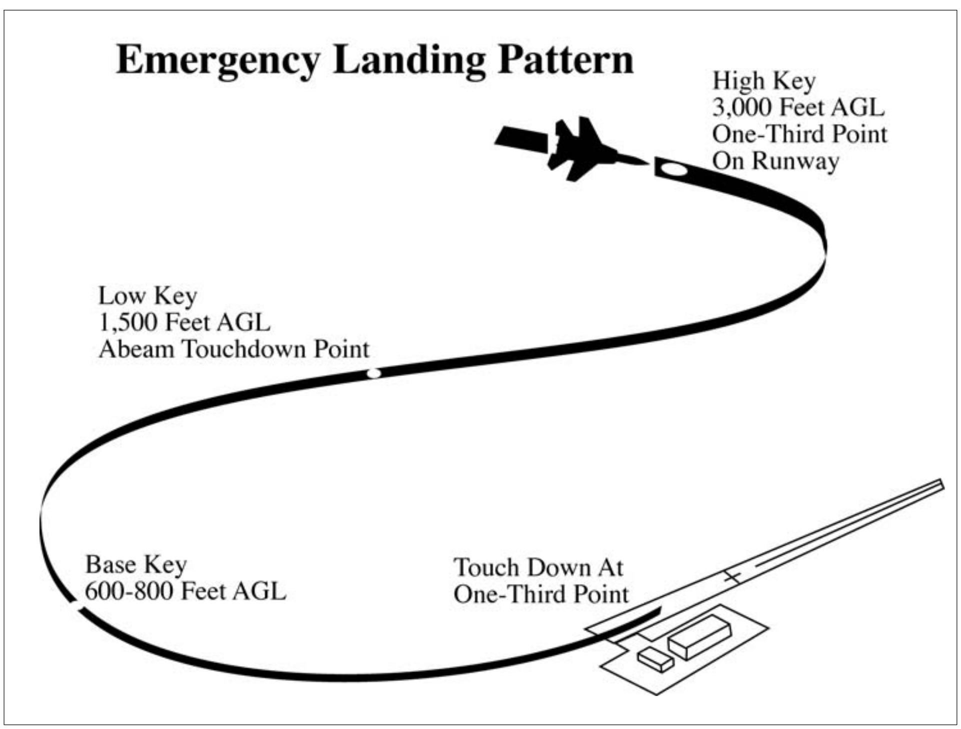



*FIG 3-10-16*
**Emergency Landing Pattern**



# Chapter 4. IFR

## Section 1. NAVAID Use Limitations

### 4-1-1. ALTITUDE AND DISTANCE LIMITATIONS

When specifying a route other than an established airway or route, do not exceed the limitations in the table on any portion of the route which lies within controlled airspace. (For altitude and distance limitations, see TBL 4-1-1, TBL 4-1-2, and TBL 4-1-3) (For correct application of altitude and distance limitations see FIG 4-1-1 and FIG 4-1-2.)

*REFERENCE-*
*FAAO JO 7110.65, Para 4-1-5, Fix Use.*
*FAAO JO 7110.65, Para 5-6-2, Methods.*

*TBL 4-1-1*
**VOR/VORTAC/TACAN NAVAIDs**
Normal Usable Altitudes and Radius Distances

| Class | Altitude | Distance (miles) |
|---|---|---|
| T | 12,000 and below | 25 |
| L | Below 18,000 | 40 |
| H | Below 14,500 | 40 |
| H | 14,500 - 17,999 | 100 |
| H | 18,000 - FL 450 | 130 |
| H | Above FL 450 | 100 |

*TBL 4-1-2*
**L/MF Radio Beacon (RBN)**
Usable Radius Distances for All Altitudes

| Class | Power (watts) | Distance (miles) |
|---|---|---|
| CL | Under 25 | 15 |
| MH | Under 50 | 25 |
| H | 50 - 1,999 | 50 |
| HH | 2,000 or more | 75 |

*TBL 4-1-3*
**ILS**
Usable Height and Distance*

| Height (feet) above transmitter | Distance (miles from transmitter) |
|---|---|
| 4,500 | 10 (for glideslope) |
| 4,500 | 18 (for localizer) |
| *Use the current flight check height/altitude limitations if different from the above minima. | |

*FIG 4-1-1*
**Application of Altitude and Distance Limitations [Application 1]**

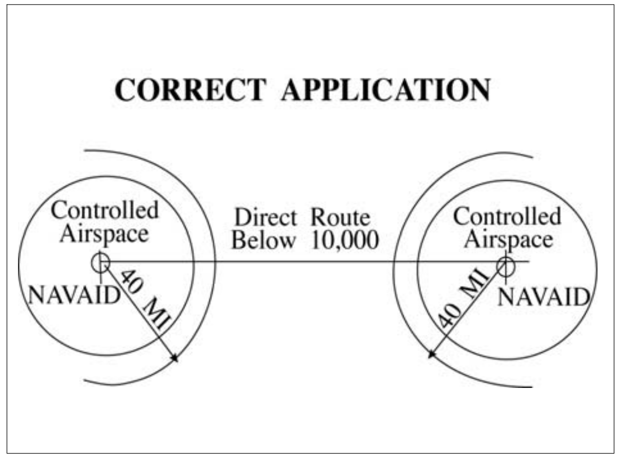
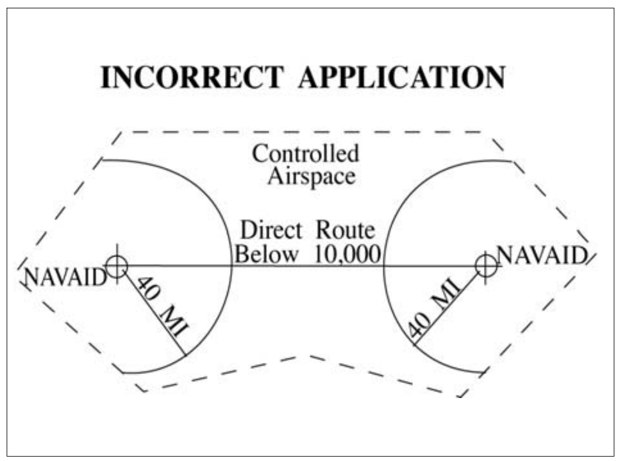



*FIG 4-1-2*
**Application of Altitude and Distance Limitations [Application 2]**




### 4-1-2. EXCEPTIONS

Altitude and distance limitations need not be applied when any of the following conditions are met:

**a.** Routing is initiated by ATC or requested by the pilot and radar monitoring is provided.

EXCEPTION-
GNSS equipped aircraft /G, /L, /S, and /V not on a random impromptu route.

***NOTE−***
**1.** *Except for GNSS-equipped aircraft /G, /L, /S, and /V, not on a random impromptu route, Paragraph 5-5-1, Application, requires radar separation be provided to RNAV aircraft operating at and below FL450 on Q routes or random RNAV routes, excluding oceanic airspace.*

**2.** *When a clearance is issued beyond the altitude and/or distance limitations of a NAVAID, in addition to being responsible for maintaining separation from other aircraft and airspace, the controller is responsible for providing aircraft with information and advice related to significant deviations from the expected flight path.*

***REFERENCE−***
*FAAO JO 7110.65, Para 2-1-3, Procedural Preference.*
*FAAO JO 7110.65, Para 4-4-2, Route Structure Transitions.*
*FAAO JO 7110.65, Para 5-1-10, Deviation Advisories.*
*FAAO JO 7110.65, Para 5-5-1, Application.*
*FAAO JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes.*
*AIM, Para 5-1-8c, Direct Flights*
*AIM, Para 5-1-8d, Area Navigation (RNAV)*
*P/CG Term - Global Navigation Satellite System (GNSS)[ICAO].*

**b.** Operational necessity requires and approval has been obtained from the Frequency Management and Flight Inspection Offices to exceed them.

**c.** Requested routing is via an MTR.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−6−2, Methods.*

## 4−1−3. CROSSING ALTITUDE

Use an altitude consistent with the limitations of the aid when clearing an aircraft to cross or hold at a fix.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−6−2, Methods.*

## 4−1−4. VFR-ON-TOP

Use a route not meeting service volume limitations only if an aircraft requests to operate "VFR-on-top" on this route.

***NOTE−***
*Aircraft equipped with TACAN only are expected to:*

**1.** *Define route of flight between TACAN or VORTAC NAVAIDs in the same manner as VOR-equipped aircraft.*

**2.** *Except in Class A airspace, submit requests for "VFR-on-top" flight where insufficient TACAN or VORTAC NAVAIDs exist to define the route.*

***REFERENCE−***
*FAAO JO 7110.65, Para 5−6−2, Methods.*

## 4−1−5. FIX USE

Request aircraft position reports only over fixes shown on charts used for the altitude being flown, except as follows:

***NOTE−***
*Waypoints filed in random RNAV routes automatically become compulsory reporting points for the flight unless otherwise advised by ATC.*

**a.** Unless the pilot requests otherwise, use only those fixes shown on high altitude en route charts, high altitude instrument approach procedures charts, and SID charts when clearing military turbojet single-piloted aircraft.

**b.** Except for military single-piloted turbojet aircraft, unpublished fixes may be used if the name of the NAVAID and, if appropriate, the radial/course/azimuth and frequency/channel are given to the pilot. An unpublished fix is defined as one approved and planned for publication which is not yet depicted on the charts or one which is used in accord with the following:

***REFERENCE−***
*FAAO 7130.3, Holding Pattern Criteria.*

**1.** Unpublished fixes are formed by the en route radial and either a DME distance from the same NAVAID or an intersecting radial from an off-route VOR/VORTAC/TACAN. DME must be used in lieu of off-route radials, whenever possible.

**2.** Except where known signal coverage restrictions exist, an unpublished fix may be used for ATC purposes if its location does not exceed NAVAID altitude and distance limitation, and when off-route radials are used, the angle of divergence meets the criteria prescribed below.

***NOTE−***
*Unpublished fixes should not negate the normal use of published intersections. Frequent routine use of an unpublished fix would justify establishing a fix.*

***REFERENCE−***
*FAAO JO 7110.65, Para 4−1−1, Altitude and Distance Limitations.*

**3.** Do not hold aircraft at unpublished fixes below the lowest assignable altitude dictated by terrain clearance for the appropriate holding pattern airspace area (template) regardless of the MEA for the route being flown.

**4.** When the unpublished fix is located on an off-route radial and the radial providing course guidance, it must be used consistent with the following divergence angles:

**(a)** When holding operations are involved with respect to subparas (b) and (c) below, the angle of divergence must be at least 45 degrees.

**(b)** When both NAVAIDs involved are located within 30 NM of the unpublished fix, the minimum divergence angle is 30 degrees.

**(c)** When the unpublished fix is located over 30 NM from the NAVAID generating the off-course radial, the minimum divergence angle must increase 1 degree per NM up to 45 NM; e.g., 45 NM would require 45 degrees.

**(d)** When the unpublished fix is located beyond 45 NM from the NAVAID generating the off-course radial, the minimum divergence angle must increase $^1/_2$ degree per NM; e.g., 130 NM would require 88 degrees.

**c.** Fixes contained in the route description of MTRs are considered filed fixes.

**d.** TACAN-only aircraft (type suffix M, N, or P) possess TACAN with DME, but no VOR or LF navigation system capability. Assign fixes based on TACAN or VORTAC facilities only.

***NOTE–***
*TACAN-only aircraft can never be held overhead the NAVAID, be it TACAN or VORTAC.*

**e.** DME fixes must not be established within the no-course signal zone of the NAVAID from which inbound holding course information would be derived.

***REFERENCE–***
*FAAO JO 7110.65, Para 2–5–3, NAVAID Fixes.*
*FAAO JO 7110.65, Para 5–6–2, Methods.*

# Section 2. Clearances

## 4−2−1. CLEARANCE ITEMS

Issue the following clearance items, as appropriate, in the order listed below:

**a.** Aircraft identification.

**b.** Clearance limit.

**1.** When the clearance limit is an airport, the word "airport" must follow the airport name.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT.*

**2.** When the clearance limit is a NAVAID, and the NAVAID type is known, the type of NAVAID must follow the NAVAID name.

***PHRASEOLOGY−***
*CLEARED TO (NAVAID name and type).*

**3.** When the clearance limit is an intersection or waypoint, and the type is known, the type must follow the intersection or waypoint name.

***PHRASEOLOGY−***
*CLEARED TO (intersection or waypoint name and type).*

**c.** Standard Instrument Departure (SID).

**d.** Route of flight including PDR/PDAR/PAR when applied.

**e.** Altitude data in the order flown.

**f.** Mach number, if applicable.

**g.** *USAF.* When issuing a clearance to an airborne aircraft containing an altitude assignment, do not include more than one of the following in the same transmission:

**1.** Frequency change.

**2.** Transponder change.

**3.** Heading.

**4.** Altimeter setting.

**5.** Traffic information containing an altitude.

**h.** Holding instructions.

**i.** Any special information.

**j.** Frequency and beacon code information.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−2−8, IFR−VFR and VFR−IFR Flights.*
*FAAO JO 7110.65, Para 4−5−7, Altitude Information.*

## 4−2−2. CLEARANCE PREFIX

**a.** Prefix a clearance, information, or a request for information which will be relayed to an aircraft through a non−ATC facility by stating "A−T−C clears," "A−T−C advises," or "A−T−C requests."

**b.** Flight service stations must prefix a clearance with the appropriate phrase: "ATC clears," "ATC advises," etc.

## 4−2−3. DELIVERY INSTRUCTIONS

Issue specific clearance delivery instructions, if appropriate.

## 4−2−4. CLEARANCE RELAY

Relay clearances verbatim.

***REFERENCE−***
*FAAO JO 7110.65, Para 10−4−4, Communications Failure.*

## 4−2−5. ROUTE OR ALTITUDE AMENDMENTS

**a.** Amend route of flight in a previously issued clearance by one of the following:

**1.** State which portion of the route is being amended and then state the amendment.

***PHRASEOLOGY−***
*CHANGE (portion of route) TO READ (new portion of route).*

**2.** State the amendment to the route and then state that the rest of the route is unchanged.

***PHRASEOLOGY−***
*(Amendment to route), REST OF ROUTE UNCHANGED.*

**3.** Issue a clearance "direct" to a point on the previously issued route.

***PHRASEOLOGY−***
*CLEARED DIRECT (fix,waypoint).*
*Or*
*CLEARED DIRECT (destination) AIRPORT.*

***NOTE−***
*Clearances authorizing "direct" to a point on a previously issued route do not require the phrase "rest of route*

*unchanged." However, it must be understood where the previously cleared route is resumed. When necessary, "rest of route unchanged" may be used to clarify routing.*

**4.** Issue the entire route by stating the amendment.

***EXAMPLE−***
*(Cessna 21A has been cleared to the Airville Airport via V41 Delta VOR V174 Alfa VOR, direct Airville Airport, maintain 9000. After takeoff, the aircraft is rerouted via V41 Frank intersection, V71 Delta VOR, V174 Alfa VOR. The controller issues one of the following as an amended clearance):*

**1.** *"Cessna Two One Alfa change Victor Forty−One Delta to read Victor Forty−One Frank, Victor Seventy−One Delta."*

**2.** *"Cessna Two One Alfa cleared via Victor Forty−One Frank, Victor Seventy−One Delta, rest of route unchanged."*

**3.** *"Cessna Two One Alfa cleared via Victor Forty−One Frank, Victor Seventy−One Delta, Victor One Seventy−Four Alfa V−O−R, direct Airville airport, maintain Niner Thousand."*

**b.** When route or altitude in a previously issued clearance is amended, restate all applicable altitude restrictions.

***EXAMPLE−***
**1.** *(A departing aircraft is cleared to cross Ollis intersection at or above 3,000; Gordonsville VOR at or above 12,000; maintain FL 200. Shortly after departure the altitude to be maintained is changed to FL 240. Because altitude restrictions remain in effect, the controller issues an amended clearance as follows):*

*"Amend altitude. Cross Ollis intersection at or above Three Thousand; cross Gordonsville V−O−R at or above One Two Thousand; maintain Flight Level Two Four Zero."*

*(Shortly after departure, altitude restrictions are no longer applicable, the controller issues an amended clearance as follows):*

*"Climb and maintain Flight Level Two Four Zero."*

**2.** *(An aircraft is cleared to climb via a SID with published altitude restrictions. Shortly after departure the top altitude is changed to FL 230 and compliance with the altitude restrictions is still required, the controller issues an amended clearance as follows):*

*"Climb via SID except maintain Flight Level Two Three Zero."*

***NOTE−***
**1.** *Restating previously issued altitude to "maintain" is an amended clearance. If altitude to "maintain" is changed or restated, whether prior to departure or while airborne and previously issued altitude restrictions are omitted, altitude restrictions are canceled, including SID/STAR altitude restrictions if any.*

**2.** *Crossing altitudes and speed restrictions on Obstacle Departure Procedure/s (ODP/s) cannot be canceled or amended by ATC.*

**c.** Issue an amended clearance if a speed restriction is declined because it cannot be complied with concurrently with a previously issued altitude restriction.

***EXAMPLE−***
*(An aircraft is cleared to cross Gordonsville VOR at 11,000. Shortly thereafter he/she is cleared to reduce his/her airspeed to 300 knots. The pilot informs the controller he/she is unable to comply with both clearances simultaneously. The controller issues an amended clearance as follows):*

*"Cross Gordonsville VOR at One One Thousand. Then, reduce speed to Three Zero Zero."*

***NOTE−***
*The phrase "do the best you can" or comparable phrases are not valid substitutes for an amended clearance with altitude or speed restrictions.*

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−18, Operational Requests.*
*FAAO JO 7110.65, Section 6, Vectoring, Para 5−6−2, Methods.*
*FAAO JO 7110.65, Section 7, Speed Adjustment, Para 5−7−2, Methods.*

**d.** Air traffic control specialists should avoid route and/or altitude changes for aircraft participating in the North American Route Program (NRP) and that are displaying "NRP" in the remarks section of their flight plan. Specialists at facilities actively participating in the High Altitude Redesign (HAR) program should avoid route and/or altitude changes for aircraft participating in full HAR and high altitude Point−to−point (PTP), and that are displaying "HAR," or "PTP" in the remarks section of their flight plan.

***NOTE−***
*Air traffic control specialists retain the latitude necessary to tactically resolve conflicts. Every effort should be made to ensure the aircraft is returned to the original filed flight plan/altitude as soon as conditions warrant.*

*REFERENCE−*
*FAAO JO 7110.65, Para 2−1−4, Operational Priority.*
*FAAO JO 7110.65, Para 2−2−15, North American Route Program (NRP) Information.*
*FAAO JO 7110.65, Para 2−3−2, En Route Data Entries.*
*FAAO JO 7210.3, Chapter 17, Section 16, North American Route Program.*

## 4−2−6. THROUGH CLEARANCES

You may clear an aircraft through intermediate stops.

*PHRASEOLOGY−*
*CLEARED THROUGH (airport) TO (fix).*

## 4−2−7. ALTRV CLEARANCE

Use the phrase "via approved altitude reservation flight plan," if the aircraft will operate in an approved ALTRV.

*PHRASEOLOGY−*
*VIA APPROVED ALTITUDE RESERVATION (mission name) FLIGHT PLAN.*

*NOTE−*
*An ALTRV normally includes the departure, climb, cruise, and arrival phases of flight up to and including holding pattern or point/time at which ATC provides separation between aircraft.*

*REFERENCE−*
*FAAO JO 7110.65, Para 4−3−3, Abbreviated Departure Clearance.*

## 4−2−8. IFR−VFR AND VFR−IFR FLIGHTS

**a.** Clear an aircraft planning IFR operations for the initial part of flight and VFR for the latter part to the fix at which the IFR part ends.

**b.** Treat an aircraft planning VFR for the initial part of flight and IFR for the latter part as a VFR departure. Issue a clearance to this aircraft when it requests IFR clearance approaching the fix where it proposes to start IFR operations. The phraseology CLEARED TO (destination) AIRPORT AS FILED may be used with abbreviated departure clearance procedures.

*REFERENCE−*
*FAAO JO 7110.65, Para 4−3−3, Abbreviated Departure Clearance.*

**c.** When an aircraft changes from VFR to IFR, the controller must assign a beacon code to Mode-C equipped aircraft that will allow MSAW alarms.

**d.** When VFR aircraft operating below the minimum altitude for IFR operations requests an IFR clearance and the pilot informs you, or you are aware, that they are unable to climb in VFR conditions to the minimum IFR altitude:

**1.** Before issuing a clearance, ask if the pilot is able to maintain terrain and obstruction clearance during a climb to the minimum IFR altitude.

*PHRASEOLOGY−*
*(Aircraft call sign), ARE YOU ABLE TO MAINTAIN YOUR OWN TERRAIN AND OBSTRUCTION CLEARANCE UNTIL REACHING (appropriate MVA/MIA/MEA/OROCA)*

*NOTE−*
*Pilots of pop−up aircraft are responsible for terrain and obstacle clearance until reaching minimum instrument altitude (MIA) or minimum en route altitude (MEA). Pilot compliance with an approved FAA procedure or an ATC instruction transfers that responsibility to the FAA; therefore, do not assign (or imply) specific course guidance that will (or could) be in effect below the MIA or MEA.*

*EXAMPLE−*
*"November Eight Seven Six, are you able to provide your own terrain and obstruction clearance between your present altitude and six thousand feet?"*

**2.** If the pilot is able to maintain their own terrain and obstruction clearance, issue the appropriate IFR clearance as prescribed in Para 4−2−1, Clearance Items, and Para 4−5−6, Minimum En Route Altitudes.

**3.** If the pilot states that they are unable to maintain terrain and obstruction clearance, instruct the pilot to maintain VFR and to state intentions.

**4.** If appropriate, apply the provisions of Para 10−2−7, VFR Aircraft In Weather Difficulty, or Para 10−2−9, Radar Assistance Techniques, as necessary.

## 4−2−9. CLEARANCE ITEMS

The following guidelines must be utilized to facilitate the processing of airfile aircraft:

**a.** Ensure the aircraft is within your area of jurisdiction unless otherwise coordinated.

**b.** Obtain necessary information needed to provide IFR service.

**c.** Issue clearance to destination, short range clearance, or an instruction to the pilot to contact an FSS if the flight plan cannot be processed. If clearance is to destination airport, the phraseology CLEARED TO (destination) AIRPORT must be used. If clearance is to a NAVAID, state the name of the NAVAID followed by the type of NAVAID, if the type is known. If clearance is to an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

***NOTE–***
*These procedures do not imply that the processing of airfiles has priority over another ATC duty to be performed.*

***REFERENCE–***
*FAAO JO 7110.65, Para 2−2−1, Recording Information.*

### 4−2−10. CANCELLATION OF IFR FLIGHT PLAN

**a.** If necessary, before instructing an IFR aircraft arriving at an airport not served by an air traffic control tower or flight service station to change to the common traffic advisory frequency, provide the pilot with instructions on how to cancel his/her IFR flight plan.

**1.** Airports with an air/ground communications station:

***PHRASEOLOGY–***
*(Call sign) REPORT CANCELLATION OF IFR ON (frequency).*

**2.** Airports without an air/ground communications station:

***PHRASEOLOGY–***
*(Call sign) REPORT CANCELLATION OF IFR THIS FREQUENCY OR WITH FLIGHT SERVICE.*
*Or*

*(Call sign) REPORT CANCELLATION OF IFR THIS FREQUENCY OR WITH (FSS serving the area or the ATC controlling facility).*

***EXAMPLE–***
*"N13WA report cancellation of IFR this frequency or with McAlester Radio."*

**b.** Respond to a pilot's cancellation of his/her IFR flight plan as follows:

***PHRASEOLOGY–***
*(Call sign) IFR CANCELLATION RECEIVED.*

# Section 3. Departure Procedures

## 4−3−1. DEPARTURE TERMINOLOGY

Avoid using the term "takeoff" except to actually clear an aircraft for takeoff or to cancel a takeoff clearance. Use such terms as "depart," "departure," or "fly" in clearances when necessary.

***REFERENCE−***
*FAAO JO 7110.65, Para 3−9−9, Takeoff Clearance.*
*FAAO JO 7110.65, Para 3−9−11, Cancellation of Takeoff Clearance.*

## 4−3−2. DEPARTURE CLEARANCES

Include the following items in IFR departure clearances:

***NOTE−***
*When considered necessary, controllers or pilots may initiate read backs of a clearance. Some pilots may be required by company rule to do so.*

**a.** Always include the airport of departure when issuing a departure clearance for relay to an aircraft by an FSS, dispatcher, etc.

**b.** Clearance Limit.

**1.** Specify the destination airport when practicable, even though it is outside controlled airspace. Issue short range clearances as provided for in any procedures established for their use.

**(a)** When the clearance limit is an airport, the word "airport" must follow the airport name.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT*

**(b)** When the clearance limit is a NAVAID and the NAVAID type is known, the type of NAVAID must follow the NAVAID name.

***PHRASEOLOGY−***
*CLEARED TO (NAVAID name and type)*

**(c)** When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

***PHRASEOLOGY−***
*CLEARED TO (intersection or waypoint name and type)*

**2.** For Air Force One (AF1) operations, do not specify the destination airport.

***NOTE−***
*Presidential detail is responsible for ensuring the accuracy of the destination airport.*

***PHRASEOLOGY−***
*DESTINATION AS FILED.*

**c.** Departure Procedures.

**1.** Specify direction of takeoff/turn or initial heading/azimuth to be flown after takeoff as follows:

**(a)** Locations with Airport Traffic Control Service− Specify these items as necessary.

**(b)** Locations without Airport Traffic Control Service, but within a Class E surface area− specify these items if necessary. Obtain/solicit the pilot's concurrence concerning these items before issuing them in a clearance.

***NOTE−***
*Direction of takeoff and turn after takeoff can be obtained/solicited directly from the pilot, or relayed by an FSS, dispatcher, etc., as obtained/solicited from the pilot.*

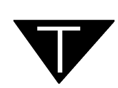
**(c)** At all other airports− Do not specify direction of takeoff/turn after takeoff. If necessary to specify an initial heading/azimuth to be flown after takeoff, issue the initial heading/azimuth so as to apply only within controlled airspace.

**2.** Where an obstacle departure procedure (ODP) has been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance.

***EXAMPLE−***
*"Depart via the (airport name)(runway number) departure procedure."*
*Or*
*"Depart via the (graphic ODP name) obstacle departure procedure."*

***NOTE−***
*Some aircraft are required by 14 CFR 91.175 to depart a runway under IFR using the ODP absent other instructions from ATC.*

***NOTE−***
*IFR takeoff minimums and obstacle departure procedures are prescribed for specific airports/runways and published in either a textual, or graphic form with the label (OBSTACLE) in the procedure title, and documented on an appropriate FAA Form 8260. To alert pilots of their existence, instrument approach procedure charts are annotated with a symbol:*



**3.** Do not solicit use of the Visual Climb over Airport (VCOA) option.

**4.** Compatibility with a procedure issued may be verified by asking the pilot if items obtained/ solicited will allow him/her to comply with local traffic pattern, terrain, or obstruction avoidance.

***PHRASEOLOGY−***
*FLY RUNWAY HEADING.*

*DEPART (direction or runway).*

*TURN LEFT/RIGHT.*

*WHEN ENTERING CONTROLLED AIRSPACE (instruction), FLY HEADING (degrees) UNTIL REACHING (altitude, point, or fix) BEFORE PROCEEDING ON COURSE.*

*FLY A (degree) BEARING/AZIMUTH FROM/TO (fix) UNTIL (time),*

*or*

*UNTIL REACHING (fix or altitude),*

*and if required,*

*BEFORE PROCEEDING ON COURSE.*

***EXAMPLE−***
*"Verify right turn after departure will allow compliance with local traffic pattern,"or "Verify this clearance will allow compliance with terrain or obstruction avoidance."*

***NOTE−***
*If a published IFR departure procedure is not included in an ATC clearance, compliance with such a procedure is the pilot's prerogative.*

**5.** SIDs:

**(a)** Assign a SID (including transition if necessary). Assign a PDR or the route filed by the pilot, only when a SID is not established for the departure route to be flown, or the pilot has indicated that he/she does not wish to use a SID.

***NOTE−***
*Departure procedure descriptive text contained within parentheses (for example, "Jimmy One (RNAV) Departure") is not included in departure clearance phraseology.*

***PHRASEOLOGY−***
*(SID name and number) DEPARTURE.*

*(SID name and number) DEPARTURE,*
*(transition name) TRANSITION.*

***EXAMPLE−***
*"Stroudsburg One Departure."*
*"Stroudsburg One Departure, Sparta Transition."*

***NOTE−***
*If a pilot does not wish to use a SID issued in an ATC clearance, or any other SID published for that location, he/she is expected to advise ATC.*

**(b)** If it is necessary to assign a crossing altitude which differs from the SID altitude emphasize the change to the pilot.

***PHRASEOLOGY−***
*(SID name and number) DEPARTURE, EXCEPT CROSS (revised altitude information).*

***EXAMPLE−***
*"Stroudsburg One Departure, except cross Quaker at five thousand.*

*"Astoria Two Departure, except cross Astor waypoint at six thousand.*

**(c)** Specify altitudes when they are not included in the SID.

***PHRASEOLOGY−***
*(SID name and number) DEPARTURE. CROSS (fix) AT (altitude).*

***EXAMPLE−***
*"Stroudsburg One Departure. Cross Jersey intersection at four thousand. Cross Range intersection at six thousand." depart*

*"Engle Two departure. Cross Pilim waypoint at or above five thousand. Cross Engle waypoint at or above seven thousand. Cross Gorge waypoint at niner thousand."*

**d.** Route of flight. Specify one or more of the following:

**1.** Airway, route, course, heading, azimuth, arc, or vector.

**2.** The routing a pilot can expect if any part of the route beyond a short range clearance limit differs from that filed.

***PHRASEOLOGY−***
*EXPECT FURTHER CLEARANCE VIA (airways, routes, or fixes.)*

**e.** Altitude. Use one of the following in the order of preference listed. Altitude may be omitted if the top altitude is published in the SID route description.

*NOTE−*
*Turbojet aircraft equipped with afterburner engines may occasionally be expected to use afterburning during their climb to the en route altitude. When so advised by the pilot, the controller may be able to plan his/her traffic to accommodate the high performance climb and allow the pilot to climb to his/her planned altitude without restriction.*

*REFERENCE−*
*PCG, Climb Via, Top Altitude*

**1.** To the maximum extent possible, Air Force One will be cleared unrestricted climb to:

**(a)** 9,000' AGL or higher.

**(b)** If unable 9,000' AGL or higher, then the highest available altitude below 9,000' AGL.

**2.** Assign the altitude requested by the pilot.

**3.** Assign an altitude, as near as possible to the altitude requested by the pilot, and

**(a)** Inform the pilot when to expect clearance to the requested altitude unless instructions are contained in the specified SID, or

**(b)** If the requested altitude is not expected to be available, inform the pilot what altitude can be expected and when/where to expect it.

*NOTE−*
**1.** *14 CFR Section 91.185, says that in the event of a two-way radio communication failure, in VFR conditions or if VFR conditions are encountered after the failure, the pilot must continue the flight under VFR and land as soon as practicable. That section also says that when the failure occurs in IFR conditions the pilot must continue flight at the highest of the following altitudes or flight levels for the route segment being flown:*

**a.** *The altitude or flight level assigned in the last ATC clearance received.*

**b.** *The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in 14 CFR Section 91.121(c)) for IFR operations. (This altitude should be consistent with MEAs, MOCAs, etc.)*

**c.** *The altitude or flight level ATC has advised may be expected in a further clearance.*

**2.** *If the expected altitude is the highest of the preceding choices, the pilot should begin to climb to that expected altitude at the time or fix specified in the clearance. The choice to climb to the expected altitude is not applicable if the pilot has proceeded beyond the specified fix or if the time designated in the clearance has expired.*

*PHRASEOLOGY−*
*CLIMB AND MAINTAIN (the altitude as near as possible to the pilot's requested altitude). EXPECT (the requested altitude or an altitude different from the requested altitude) AT (time or fix),*

*and if applicable,*

*(pilot's requested altitude) IS NOT AVAILABLE.*

*EXAMPLE−*
**1.** *A pilot has requested flight level 350. Flight level 230 is immediately available and flight level 350 will be available at the Appleton zero five zero radial 35 mile fix. The clearance will read:*
*"Climb and maintain flight level two three zero. Expect flight level three five zero at Appleton zero five zero radial three five mile fix."*

**2.** *A pilot has requested 9,000 feet. An altitude restriction is required because of facility procedures or requirements. Assign the altitude and advise the pilot at what fix/time the pilot may expect the requested altitude. The clearance could read:*
*"Climb and maintain five thousand. Expect niner thousand one zero minutes after departure."*

**3.** *A pilot has requested 17,000 feet which is unavailable. You plan 15,000 feet to be the pilot's highest altitude prior to descent to the pilot's destination but only 13,000 feet is available until San Jose VOR. Advise the pilot of the expected altitude change and at what fix/time to expect clearance to 15,000 feet. The clearance will read: "Climb and maintain one three thousand. Expect one five thousand at San Jose. One seven thousand is not available."*

*REFERENCE−*
*FAAO JO 7110.65, Para 4−3−3, Abbreviated Departure Clearance.*
*FAAO JO 7110.65, Para 5−8−2, Initial Heading.*

**4.** Use one of the following when the SID contains published crossing restrictions:

**(a)** When the top altitude is included in the SID route description, instruct aircraft to "climb via SID."

**(b)** When a top altitude is not published on a SID that contains published crossing restrictions, or when it is necessary to issue an interim altitude instruct the aircraft to "Climb via SID except (altitude assignment/ change)".

*EXAMPLE−*
*"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five. Climb via SID."*

*"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb via SID except maintain flight level one eight zero."*

*"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb Via SID*

*except maintain flight level one eight zero, expect flight level three five zero one zero minutes after departure."*

***NOTE–***
*Considering the principle that the last ATC clearance issued has precedence over the previous, the phraseology 'maintain (altitude)' alone cancels previously issued altitude restrictions, including SID/STAR altitude restrictions, unless they are restated or modified.*

***REFERENCE–***
*FAA JO7110.65 Para 4-2-5 Route or Altitude Amendments*
*AIM 4-4-10 Adherence to Clearance*

## 4–3–3. ABBREVIATED DEPARTURE CLEARANCE

**a.** Issue an abbreviated departure clearance if its use reduces verbiage and the following conditions are met:

***REFERENCE–***
*FAAO JO 7110.65, Para 4–2–8 IFR-VFR and VFR-IFR Flights.*

**1.** The route of flight filed with ATC has not been changed by the pilot, company, operations officer, input operator, or in the stored flight plan program prior to departure.

***NOTE–***
*A pilot will not accept an abbreviated clearance if the route of flight filed with ATC has been changed by him/her or the company or the operations officer before departure. He/she is expected to inform the control facility on initial radio contact if he/she cannot accept the clearance. It is the responsibility of the company or operations officer to inform the pilot when they make a change.*

**2.** All ATC facilities concerned have sufficient route of flight information to exercise their control responsibilities.

***NOTE–***
*The route of flight information to be provided may be covered in letters of agreement.*

**3.** When the flight will depart IFR, destination airport information is relayed between the facilities concerned prior to departure.

***EXAMPLE–***
**1.** *A tower or flight service station relay of destination airport information to the center when requesting clearance:*
*"Request clearance for United Four Sixty-One to O'Hare."*

**2.** *A center relay to the tower or flight service station when initiating a clearance:*
*"Clearance for United Four Sixty-One to O'Hare."*

***NOTE–***
*Pilots are expected to furnish the facility concerned with destination airport information on initial radio call-up. This will provide the information necessary for detecting any destination airport differences on facility relay.*

**4.** The assigned altitude, according to the provisions in para 4–3–2, Departure Clearances, subparagraph e, is stated in the clearance. Where a top altitude is published in the SID route description it may be omitted.

**b.** If it is necessary to modify a filed route of flight in order to achieve computer acceptance due, for example, to incorrect fix or airway identification, the contraction "FRC," meaning "Full Route Clearance Necessary," or "FRC/(fix)," will be added to the remarks. "FRC" or "FRC/(fix)" must always be the first item of intra-center remarks. When "FRC" or "FRC/(fix)" appears on a flight progress strip, the controller issuing the ATC clearance to the aircraft must issue a full route clearance to the specified fix, or, if no fix is specified, for the entire route.

***EXAMPLE–***
*"Cleared to Missoula International Airport, Chief Two Departure to Angley; direct Salina; then as filed; maintain one seven thousand."*

***NOTE–***
*Changes, such as those made to conform with traffic flows and preferred routings, are only permitted to be made by the pilot (or his/her operations office) or the controller responsible for initiating the clearance to the aircraft.*

**c.** Specify the destination airport in the clearance.

**d.** When no changes are required in the filed route, state the phrase: "Cleared to (destination) airport, ([SID name and number] and SID transition, as appropriate); then, as filed." If a SID is not assigned, follow with "As filed."

**1.** Specify the assigned altitude. The altitude may be omitted and pilots instructed to "climb via SID" when a top altitude is published in the SID route description.

**2.** When the SID has published altitude restrictions but the top altitude is not published or must be changed, state the phrase "climb via SID except maintain" to assign the top altitude. If required, add any additional instructions or information, including final requested altitude if different than assigned except if Pre−Departure Clearance (PDC) is utilized.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT;*

*and as appropriate,*

*(SID name and number) DEPARTURE,*
*THEN AS FILED.*

*MAINTAIN (altitude); (additional instructions or information).*

*Or as appropriate,*

*CLIMB VIA SID.*

*CLIMB VIA SID except maintain (altitude); (additional instructions or information).*

*If a SID is not assigned,*

*CLEARED TO (destination) AIRPORT AS FILED.*
*MAINTAIN (altitude);*

*and if required,*

*(additional instructions or information).*

***EXAMPLE−***
*"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."*

*"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID."*

*"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID except maintain flight level two four zero. Expect flight level four one zero, one zero minutes after departure.*

*"Cleared to Reynolds Airport as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."*

***NOTE−***
**1.** *SIDs are excluded from "cleared as filed" procedures.*

**2.** *If a pilot does not wish to accept an ATC clearance to fly a SID, he/she is expected to advise ATC or state "NO SID" in his/her flight plan remarks.*

***REFERENCE−***
*PCG, Climb Via, Top Altitude*

**e.** When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must either:

**1.** Issue a FRC/FRC until a fix; or

**2.** If it reduces verbiage, state the phrase: "Cleared to (destination) airport, or cleared NAVAID, intersection, or waypoint (type if known), (SID name and number and SID transition, as appropriate), then as filed, except ..." Specify the necessary revision.

**3.** Specify the assigned altitude. The altitude may be omitted and pilots instructed to "climb via SID" when a top altitude is published in the SID route description.

**4.** When the SID has published altitude restrictions but the top altitude is not published or must be changed state the phrase "climb via SID except maintain" and the assign the top altitude. If required, add any additional instructions or information.

**5.** If a SID is not assigned, state: "Cleared to (destination) airport or cleared to NAVAID, intersection, or waypoint (type if known) as filed, except ..." Specify the necessary revision, the assigned altitude; and if required, add any additional instructions or information.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT.*

*Or*

*CLEARED TO (NAVAID name and type).*

*Or*

*CLEARED TO (intersection or waypoint name and type).*

*and as appropriate,*

*(SID name and number) DEPARTURE,*

*(transition name) TRANSITION; THEN,*

*AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion).*

*MAINTAIN (altitude);*

*Or as appropriate,*

*CLIMB VIA SID*

*CLIMB VIA SID except maintain (altitude); (additional instructions or information);*

*and if required,*

*(additional instructions or information).*

*If a SID is not assigned,*

*CLEARED TO (destination) AIRPORT AS FILED,*

*EXCEPT CHANGE ROUTE TO READ (amended route portion).*

*MAINTAIN (altitude);*

*and if required,*

*(additional instructions or information).*

***EXAMPLE−***
*"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."*

*"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID."*

*"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID except maintain flight level one eight zero, expect flight level three one zero one zero minutes after departure."*

*"Cleared to Reynolds Airport as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."*

*"Cleared to Reynolds Airport via Victor Ninety-one Albany, then as filed. Maintain six thousand."*

**f.** In a nonradar environment specify one, two, or more fixes, as necessary, to identify the initial route of flight.

**1.** Specify the destination airport, when practicable, followed by the word "airport" even though it is outside controlled airspace.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT*

**2.** When the clearance limit is a NAVAID, the type of NAVAID must follow the NAVAID name.

***PHRASEOLOGY−***
*CLEARED TO (NAVAID name and type)*

**3.** When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

***PHRASEOLOGY−***
*CLEARED TO (intersection or waypoint name and type)*

***EXAMPLE−***
*The filed route of flight is from Hutchins V10 Emporia, thence V10N and V77 to St. Joseph. The clearance will read:*
*"Cleared to Watson Airport as filed via Emporia, maintain Seven Thousand."*

**g.** Do not apply these procedures when a pilot requests a detailed clearance or to military operations conducted within ALTRV, stereo routes, operations above FL 600, and other military operations requiring special handling.

***NOTE−***
*Departure clearance procedures and phraseology for military operations within approved altitude reservations, military operations above FL 600, and other military operations requiring special handling are contained in separate procedures in this order or in a LOA, as appropriate.*

***REFERENCE−***
*FAAO JO 7110.65, Para 4−2−7, ALTRV Clearance.*
*FAAO JO 7110.65, Para 9−2−14, Military Operations Above FL 600.*

## 4−3−4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES

Assign departure restrictions, clearance void times, hold for release, or release times when necessary to separate departures from other traffic or to restrict or regulate the departure flow.

***REFERENCE−***
*FAAO JO 7110.65, Para 10−3−1, Overdue Aircraft.*
*FAAO JO 7110.65, Para 10−4−1, Traffic Restrictions.*
*FAAO JO 7110.65, Para 10−4−3, Traffic Resumption.*

**a.** Clearance Void Times.

**1.** When issuing clearance void times at airports not served by control towers, provide alternative instructions requiring the pilots to advise ATC of their intentions no later than 30 minutes after the clearance void time if not airborne.

**2.** The facility delivering a clearance void time to a pilot must issue a time check.

***PHRASEOLOGY−***
*CLEARANCE VOID IF NOT OFF BY (clearance void time),*

*and if required,*

*IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.*

*TIME (time in hours, minutes, and the nearest quarter minute).*

**b.** Hold For Release (HFR).

**1.** "Hold for release" instructions must be used when necessary to inform a pilot or a controller that a departure clearance is not valid until additional instructions are received.

***REFERENCE−***
*P/CG Term− Hold for Release.*

**2.** When issuing hold for release instructions, include departure delay information.

***PHRASEOLOGY−***
*(Aircraft identification) CLEARED TO (destination) AIRPORT AS FILED, MAINTAIN (altitude),*

*and if required,*

*(additional instructions or information).*

*HOLD FOR RELEASE, EXPECT (time in hours and/or minutes) DEPARTURE DELAY.*

**3.** When conditions allow, release the aircraft as soon as possible.

***PHRASEOLOGY−***
*To another controller,*

*(aircraft identification) RELEASED.*

*To a flight service specialist,*

*ADVISE (aircraft identification) RELEASED FOR DEPARTURE.*

*To a pilot at an airport not served by a control tower,*

*(aircraft identification) RELEASED FOR DEPARTURE.*

**c.** Release Times.

**1.** Release times must be issued to pilots when necessary to specify the earliest time an aircraft may depart.

***NOTE−***
*A release time is a departure restriction issued to a pilot (either directly or through authorized relay) to separate a departing aircraft from other traffic.*

**2.** The facility issuing a release time to a pilot must include a time check.

***PHRASEOLOGY−***
*(Aircraft identification) RELEASED FOR DEPARTURE AT (time in hours and/or minutes),*

*and if required,*

*IF NOT OFF BY (time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.*

*TIME (time in hours, minutes, and nearest quarter minute).*

**d.** When expect departure clearance times (EDCT) are assigned through traffic management programs, excluding overriding call for release (CFR) operations as described in subparagraph e, the departure terminal must, to the extent possible, plan ground movement of aircraft destined to the affected airport(s) so that flights are sequenced to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT. Do not release aircraft on their assigned EDCT if a ground stop (GS) applicable to that aircraft is in effect, unless approval has been received from the originator of the GS.

**e.** Call for Release (CFR). When CFR is in effect, release aircraft so they are airborne within a window that extends from 2 minutes prior and ends 1 minute after the assigned time, unless otherwise coordinated.

***NOTE−***
**1.** *Subparagraph (e) applies to all facilities.*

**2.** *Coordination may be verbal, electronic, or written.*

**1.** If an aircraft has begun to taxi or requests taxi in a manner consistent with meeting the EDCT, the aircraft must be released. Additional coordination is not required.

**2.** If an aircraft requests taxi or clearance for departure inconsistent with meeting the EDCT window, ask the pilot to verify the EDCT.

**(a)** If the pilot's EDCT is the same as the FAA EDCT, the aircraft is released consistent with the EDCT.

**(b)** If the pilot's EDCT is not the same as the FAA EDCT, refer to Trust and Verify Note below.

**3.** If an aircraft requests taxi too late to meet the EDCT, contact the ATCSCC through the appropriate TMU.

***NOTE–***
*(Trust & Verify) EDCTs are revised by Air Carriers and Traffic Management for changing conditions en route or at affected airport(s). Terminal controllers' use of aircraft reported EDCT for departure sequencing should be verified with the appropriate TMU prior to departure if this can be accomplished without the aircraft incurring delay beyond the EDCT reported by the aircraft. The preferred method for verification is the Flight Schedule Monitor (FSM). If the EDCT cannot be verified without incurring additional delay, the aircraft should be released based on the pilot reported EDCT. The aircraft operator is responsible for operating in a manner consistent to meet the EDCT.*

## 4–3–5. GROUND STOP

Do not release an aircraft if a ground stop (GS) applicable to that aircraft is in effect, without the approval of the originator of the GS.

## 4–3–6. DELAY SEQUENCING

When aircraft elect to take delay on the ground before departure, issue departure clearances to them in the order in which the requests for clearance were originally made if practicable.

## 4–3–7. FORWARD DEPARTURE DELAY INFORMATION

Inform approach control facilities and/or towers of anticipated departure delays.

## 4–3–8. COORDINATION WITH RECEIVING FACILITY

**a.** Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility's boundary unless an automatic transfer of data between automated systems will occur, in which case, the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.

***NOTE–***
*Agreements requiring additional time are encouraged between facilities that need earlier coordination. However, when agreements establish mandatory radar handoff procedures, coordination needs only be effected in a timely manner prior to transfer of control.*

***REFERENCE–***
*FAAO JO 7110.65, Chapter 5, Section 4, Transfer of Radar Identification, Para 5–4–1, Application.*

**b.** The actual departure time or a subsequent strip posting time must be forwarded to the receiving facility unless assumed departure times are agreed upon and that time is within 3 minutes of the actual departure time.

## 4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, or air/ground communications station:

**a.** After obtaining, if necessary, approval from the facility/sector responsible for issuing the IFR clearance, you may authorize an IFR flight planned aircraft to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

***PHRASEOLOGY–***
*VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time if required) FOR CLEARANCE.*

**b.** If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot, and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

## 4–3–10. FORWARDING DEPARTURE TIMES

*TERMINAL*

Unless alternate procedures are prescribed in a letter of agreement or automatic departure messages are being transmitted between automated facilities, forward departure times to the facility from which you received the clearance and also to the terminal departure controller when that position is involved in the departure sequence.

***NOTE−***
**1.** *Letters of agreement prescribing assumed departure times or mandatory radar handoff procedures are alternatives for providing equivalent procedures.*
**2.** *The letters "DM" flashing in the data block signify unsuccessful transmission of a departure message.*

***REFERENCE−***
*FAAO JO 7210.3, Para 11−2−6, Automatic Acquisition/Termination Areas.*

### 4−6−4. HOLDING INSTRUCTIONS

When issuing holding instructions, specify:

**a.** Direction of holding from the fix/waypoint.

**b.** Holding fix or waypoint.

*NOTE−*
*The holding fix may be omitted if included at the beginning of the transmission as the clearance limit.*

**c.** Radial, course, bearing, track, azimuth, airway, or route on which the aircraft is to hold.

**d.** Leg length in miles if DME or RNAV is to be used. Specify leg length in minutes if the pilot requests it or you consider it necessary.

**e.** Direction of holding pattern turns only if left turns are to be made, the pilot requests it, or you consider it necessary.

*PHRASEOLOGY−*
*HOLD (direction) OF (fix/waypoint) ON (specified radial, course, bearing, track, airway, azimuth(s), or route.)*

*If leg length is specified,*

*(number of minutes/miles) MINUTE/MILE LEG.*

*If direction of turn is specified,*

*LEFT/RIGHT TURNS.*

**f.** Issue maximum holding airspeed advisories when an aircraft is:

**1.** Approved to exceed the maximum airspeed of a pattern, and is cleared into a holding pattern that will protect for the greater speed; or

**2.** Observed deviating from the holding pattern airspace area; or

**3.** Cleared into an airspeed restricted holding pattern in which the icon has not been published.

*EXAMPLE−*
*Due to turbulence, a turboprop requests to exceed the recommended maximum holding airspeed. ATCS may clear the aircraft into a pattern that protects for the airspeed request, and must advise the pilot of the maximum holding airspeed for the holding pattern airspace area.*

*PHRASEOLOGY−*
*"MAXIMUM HOLDING AIRSPEED IS TWO ONE ZERO KNOTS."*

### 4−6−5. VISUAL HOLDING POINTS

You may use as a holding fix a location which the pilot can determine by visual reference to the surface if he/she is familiar with it.

*PHRASEOLOGY−*
*HOLD AT (location) UNTIL (time or other condition.)*

*REFERENCE−*
*FAAO JO 7110.65, Para 7−1−4 Visual Holding of VFR Aircraft.*

### 4−6−6. HOLDING FLIGHT PATH DEVIATION

Approve a pilot's request to deviate from the prescribed holding flight path if obstacles and traffic conditions permit.

### 4−6−7. UNMONITORED NAVAIDs

Separate an aircraft holding at an unmonitored NAVAID from any other aircraft occupying the course which the holding aircraft will follow if it does not receive signals from the NAVAID.

### 4−6−8. ILS PROTECTION/CRITICAL AREAS

When conditions are less than reported ceiling 800 feet or visibility of 2 miles, do not authorize aircraft to hold below 5,000 feet AGL inbound toward the airport on or within 1 statute mile of the localizer between the ILS OM or the fix used in lieu of the OM and the airport. *USAF.* The holding restriction applies only when an arriving aircraft is between the ILS OM or the fix used in lieu of the OM and the runway.

*REFERENCE−*
*FAAO 7130.3, Holding Pattern Criteria.*

**2.** Radar vectors will be provided to the final approach course.

***EXAMPLE−***
*"Expect surveillance/precision approach to runway one seven; radar vectors to final approach course."*

**3.** Current weather whenever the ceiling is below 1,000 feet (**USAF:** 1,500 feet) or the highest circling minimum whichever is greater, or when the visibility is less than 3 miles.

***EXAMPLE−***
*"Expect ILS approach to runway eight; radar vectors to localizer course. Weather (reported weather)."*

**c.** If ATIS is provided and the pilot advises he/she has received the current ATIS broadcast before the descent clearance in subpara b is issued, omit those items in subpara b that are contained in the broadcast.

**d.** To avoid requiring an aircraft to fly at low altitudes for an excessive distance, descent clearance should be issued at a point determined by adding 10 to the first two digits of the flight level.

***EXAMPLE−***
*For FL 370, 37 + 10 = 47 miles.*

***NOTE−***
*Turbojet en route descents are based on a rate of descent of 4,000 to 6,000 feet per minute.*

**e.** Do not terminate the en route descent of an aircraft without the consent of the pilot except as required by radar outage or an emergency situation.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−8−4 Altitude Assignment for Military High Altitude Instrument Approaches.*

## 4−7−6. ARRIVAL INFORMATION

*EN ROUTE*

**a.** Forward the following information to nonapproach control towers soon enough to permit adjustment of the traffic flow or to FSSs soon enough to provide local airport advisory where applicable:

**1.** Aircraft identification.

**2.** Type of aircraft.

**3.** ETA.

**4.** Type of instrument approach procedure the aircraft will execute; or

**5.** For SVFR, the direction from which the aircraft will enter Class B, Class C, Class D, or Class E surface area and any altitude restrictions that were issued; or

**6.** For aircraft executing a contact approach the position of the aircraft.

***NOTE−***
*Specific time requirements are usually stated in a letter of agreement.*

**b.** Forward the following information to approach control facilities before transfer of control jurisdiction:

***NOTE−***
*Transfer points are usually specified in a letter of agreement.*

**1.** Aircraft identification.

**2.** Type of aircraft and appropriate aircraft equipment suffix.

**3.** ETA or actual time, and proposed or actual altitude over clearance limit. The ETA need not be given if the arrival information is being forwarded during a radar handoff.

**4.** Clearance limit (when other than the destination airport) and EFC issued to the aircraft. Clearance limit may be omitted when provided for in a letter of agreement.

**5.** Time, fix, or altitude when control responsibility is transferred to the approach control facility. This information may be omitted when provided for in a letter of agreement.

***PHRASEOLOGY−***
*(Identification), (type of aircraft), ESTIMATED/OVER (clearance limit), (time), (altitude), EFC (time).*

*If required,*

*YOUR CONTROL,*

*or*

*YOUR CONTROL AT (time, fix or altitude).*

## 4−7−7. WEATHER INFORMATION

*EN ROUTE*

When an available official weather report indicates weather conditions are below a 1,000−foot (*USAF:* 1,500−foot) ceiling or below the highest circling minimum, whichever is higher, or less than three-miles visibility for the airport concerned, transmit the weather report and changes classified as special weather observations to an arriving aircraft prior to or as part of the approach clearance when:

**a.** It is transmitted directly to the pilot via center controller-to-pilot communications.

**b.** It is relayed through a communications station other than an air carrier company radio or through a nonapproach control facility. You may do this by telling the station or nonapproach control facility to issue current weather.

## 4-7-8. BELOW MINIMA REPORT BY PILOT

If an arriving aircraft reports weather conditions are below his/her landing minima:

***NOTE-***
*Determination that existing weather/visibility is adequate for approach/landing is the responsibility of the pilot/aircraft operator.*

**a.** Issue appropriate instructions to the aircraft to hold or proceed to another airport.

**b.** Adjust, as necessary, the position in the landing sequence of any other aircraft desiring to make approaches and issue approach clearances accordingly.

## 4-7-9. TRANSFER OF JURISDICTION

Transfer radio communications and control responsibility early enough to allow the receiving facility to clear an aircraft beyond the clearance limit before the aircraft reaches it.

## 4-7-10. APPROACH INFORMATION

**a.** Both en route and terminal approach control sectors must provide current approach information to aircraft destined to airports for which they provide approach control services. This information must be provided on initial contact or as soon as possible thereafter. Approach information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS code. For pilots destined to an airport without ATIS, items 3-5 below may be omitted after the pilot advises receipt of the automated weather; otherwise, issue approach information by including the following:

**1.** Approach clearance or type approach to be expected if two or more approaches are published and the clearance limit does not indicate which will be used.

**2.** Runway if different from that to which the instrument approach is made.

**3.** Surface wind.

**4.** Ceiling and visibility if the reported ceiling at the airport of intended landing is below 1,000 feet or below the highest circling minimum, whichever is greater, or the visibility is less than 3 miles.

**5.** Altimeter setting for the airport of intended landing.

***REFERENCE-***
*FAAO JO 7110.65, Chapter 2, Section 7, Altimeter Settings.*

**b.** Upon pilot request, controllers must inform pilots of the frequency where automated weather data may be obtained and, if appropriate, that airport weather is not available.

***PHRASEOLOGY-***
*(Airport) AWOS/ASOS WEATHER AVAILABLE ON (frequency).*

**1.** ASOS/AWOS must be set to provide one minute weather at uncontrolled airports that are without ground-to-air weather broadcast capability by a CWO, NWS or FSS observer.

**2.** Controllers will consider the long-line disseminated weather from an automated weather system at an uncontrolled airport as trend information only and must rely on the pilot for the current weather information for that airport.

**3.** Controllers must issue the last long-line disseminated weather to the pilot if the pilot is unable to receive the ASOS/AWOS broadcast.

***NOTE-***
*Aircraft destined to uncontrolled airports, which have automated weather data with broadcast capability, should monitor the ASOS/AWOS frequency to ascertain the current weather at the airport. The pilot should advise the controller when he/she has received the broadcast weather and state his/her intentions.*

**c.** Issue any known changes classified as special weather observations as soon as possible. Special weather observations need not be issued after they are included in the ATIS broadcast and the pilot states the appropriate ATIS code.

**d.** Advise pilots when the ILS on the runway in use is not operational if that ILS is on the same frequency as an operational ILS serving another runway.

***EXAMPLE−***
*"Expect visual approach runway two five right, runway two five right I−L−S not operational."*

***REFERENCE−***
*FAAO JO 7110.65, Para 2−7−2, Altimeter Setting Issuance Below Lowest Usable FL.*
*FAAO JO 7110.65, Para 5−10−2, Approach Information.*
*14 CFR Section 91.129 Operations in Class D Airspace, Subpara (d)(2).*

**e.** *TERMINAL*: If multiple runway transitions are depicted on a STAR procedure, advise pilots of the runway assignment on initial contact or as soon as possible thereafter.

## 4−7−11. ARRIVAL INFORMATION BY APPROACH CONTROL FACILITIES

*TERMINAL*

**a.** Forward the following information to nonapproach control towers soon enough to permit adjustment of the traffic flow or to FSSs soon enough to provide local airport advisory where applicable:

**1.** Aircraft identification.

**2.** Type of aircraft.

**3.** ETA.

**4.** Type of instrument approach procedure the aircraft will execute; or

**5.** For SVFR, the direction from which the aircraft will enter Class B, Class C, Class D, or Class E surface area and any altitude restrictions that were issued; or

**6.** For aircraft executing a contact approach, the position of the aircraft.

***NOTE−***
*Specific time requirements are usually stated in a letter of agreement.*

**b.** Forward the following information to the tower when the tower and TRACON are part of the same facility:

**1.** Aircraft identification.

**2.** Type aircraft if required for separation purposes.

**3.** Type of instrument approach procedure and/or runway if differing from that in use.

***NOTE−***
*The local controller has the responsibility to determine whether or not conditions are adequate for the use of ATTS data on the CTRD where a facility directive authorizes its use for the transfer of arrival data.*

***REFERENCE−***
*FAAO JO 7210.3, Para 11−2−4, Use of Modify and Quick Look Functions.*
*FAAO JO 7210.3, Para 11−8−4, Use of STARS Quick Look Functions.*

**c.** Where the collocated or satellite tower has ATTS data displayed on its CTRD, the ATTS modify or quick look functions may be used to forward arrival data provided that a facility directive at the collocated tower or a letter of agreement with the satellite tower exists which outlines procedures for using ATTS for transferring this data.

**d.** Forward the following information to centers:

**1.** Where two or more instrument approach procedures are published for the airport, the particular procedure which an aircraft can expect or that it will be vectored toward the airport for a visual approach.

**2.** Highest altitude being used by the approach control facility at the holding fix.

**3.** Average time interval between successive approaches.

**4.** Arrival time of aircraft over the holding fix or, if control has been transferred to you before an aircraft has reached the fix, a statement or other indication acknowledging receipt of control responsibility.

**5.** Revised EFC if different by 10 minutes or more from that issued by the center.

**6.** Missed approaches if they affect center operations.

**7.** Information relating to an unreported or overdue aircraft.

## 4−7−12. AIRPORT CONDITIONS

**a.** *EN ROUTE.* Before issuing an approach clearance or en route descent, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing.

***NOTE−***
**1.** *Airport conditions information, in the provision of en route approach control service, does not include information pertaining to cold temperature compensation or the airport surface environment other than the landing area(s) or obstruction information for aircraft that will be*

*cleared for an instrument approach. Accordingly, D NOTAMs that contain the keywords TAXIWAY (TWY), RAMP, APRON, or SERVICE (SVC) are not required to be issued. Additionally, Obstruction NOTAMs (OBST) are not required to be issued if an aircraft will be cleared for an instrument approach.*

**2.** *When advised of special use airspace (SUA) or military training route (MTR) activation, appropriate action is taken to separate nonparticipating IFR aircraft from those activities when required, and/or to issue applicable advisories as warranted. When meeting this requirement, there is no requirement for controllers to additionally issue the associated D NOTAM activating that SUA or MTR to the pilot. Accordingly, D NOTAMs for SUA that contain the accountability codes SUAE, SUAC, and SUAW are not required to be issued.*

**b.** *TERMINAL.* On first contact or as soon as possible thereafter, and subsequently as changes occur, inform an aircraft of any abnormal operation of approach and landing aids and of destination airport conditions that you know of which might restrict an approach or landing. This information may be omitted if it is contained in the ATIS broadcast and the pilot states the appropriate ATIS code.

***REFERENCE−***
*FAAO JO 7110.65, Chapter 3, Section 3, Airport Conditions.*

**c.** *TERMINAL.* Where RCRs are provided, transmit this information to USAF and ANG aircraft in accordance with one of the following. Issue the RCR to other aircraft upon pilot request.

**1.** Before or when an approach clearance is issued.

**2.** Before an en route descent clearance is issued.

**3.** Prior to departure.

**4.** As soon as possible after receipt of any subsequent changes in previously issued RCR information.

***NOTE−***
**1.** *USAF has established RCR procedures for determining the average deceleration readings of runways under conditions of water, slush, ice, or snow. The use of RCR code is dependent upon the pilot having a "stopping capability chart" specifically applicable to his/her aircraft.*

**2.** *USAF offices furnish RCR information at airports serving USAF and ANG aircraft.*

***REFERENCE−***
*FAAO JO 7110.65, Para 3−3−1, Landing Area Condition.*

## 4−7−13. SWITCHING ILS RUNWAYS

*TERMINAL*

When a change is made from one ILS to another at airports equipped with multiple systems which are not used simultaneously, coordinate with the facilities which use the fixes formed by reference to these NAVAIDs.

# Section 8. Approach Clearance Procedures

## 4-8-1. APPROACH CLEARANCE

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

**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.

**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.** Standard instrument approach procedures (SIAP) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF.

**4.** 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.

**5.** 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.

**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.*

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

*CLEARED APPROACH.*

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

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

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

*CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.*
*(When the title of the approach procedure contains "or LOC")*

*CLEARED LOCALIZER APPROACH*

***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."*

***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.*

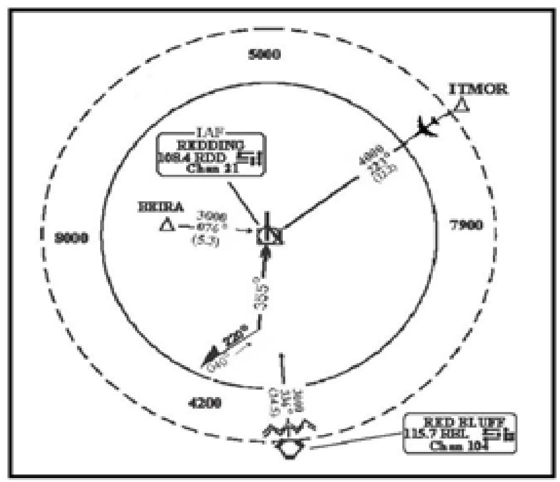
***REFERENCE–***
*FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).*
*P/CG Term – Cold Temperature Compensation*
*AIM, Paragraph 5-1-17, Cold Temperature Operations*
*AIM, Paragraph 5-5-4, Instrument Approach*

**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**



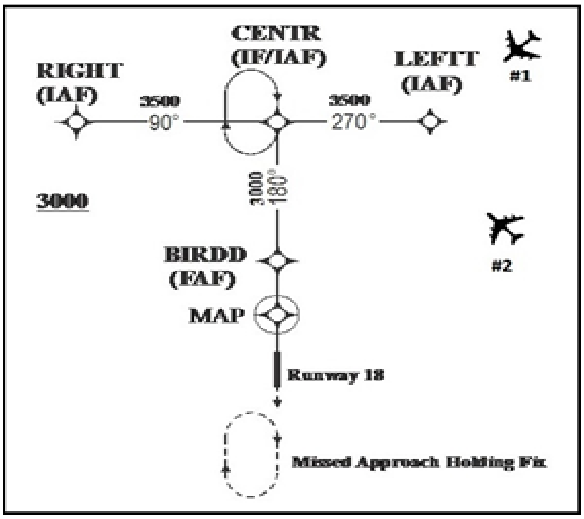

**2.** Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure. (See FIG 4-8-2.)

***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−***

*FAAO 8260.3 United States Standard for Terminal Instrument Procedures (TERPS), Para 10-2*

**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−***

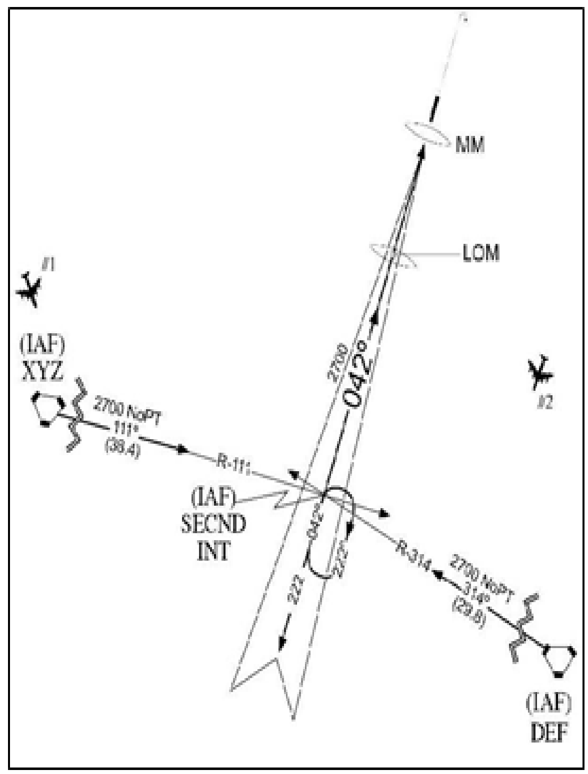
*"Cleared direct SECND, maintain at or above three thousand until SECND, cleared straight-in ILS Runway One-Eight approach."*

***REFERENCE−***

*AIM, Paragraph 5-4-5, Instrument Approach Procedure Charts*
*AIM, Paragraph 5-4-9, Procedure Turn and Hold-in-lieu of Procedure Turn*

*FIG 4−8−3*

**Approach Clearance Example**
**For Aircraft On a Conventional Approach**




***EXAMPLE−***

*Aircraft 1 can be cleared direct to XYZ VORTAC, or SECND because the intercept angle is 90 degrees or less.*

*Aircraft 2 cannot be cleared to XYZ VORTAC because the intercept angle is greater than 90 degrees.*

*Aircraft 2 can be cleared to SECND if allowed to execute the hold-in-lieu of procedure turn pattern.*

**f.** Except when applying radar procedures, timed or visual approaches, clear an aircraft for an approach to an airport when the preceding aircraft has landed or canceled IFR flight plan.

**g.** Where instrument approaches require radar monitoring and radar services are not available, do not use the phraseology "cleared approach," which allows the pilot his/her choice of instrument approaches.

## RNAV APPLICATION

**h.** For RNAV−equipped aircraft operating on unpublished routes, issue approach clearance for conventional or RNAV SIAP including approaches with RF legs only after the aircraft is: (See FIG 4−8−4).

**1.** Established on a heading or course direct to the IAF at an intercept angle not greater than 90 degrees and is assigned an altitude in accordance with b2. Radar monitoring is required to the IAF for RNAV (RNP) approaches when no hold−in−lieu of procedure turn is executed.

***EXAMPLE−***
*Aircraft 1 can be cleared direct to CENTR. 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. If a hold in lieu of procedure turn pattern is depicted at an IAF and a TAA is not defined, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a hold-in-lieu procedure turn. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared straight-in RNAV Runway One-Eight Approach."*

**2.** Established on a heading or course direct to the IF at an angle not greater than 90 degrees, provided the following conditions are met:

**(a)** Assign an altitude in accordance with b2 that will permit a normal descent to the FAF.

***NOTE−***
*Controllers should expect aircraft to descend at approximately 150-300 feet per nautical mile when applying guidance in subpara d2(a).*

**(b)** Radar monitoring is provided to the IF.

**(c)** The SIAP must identify the intermediate fix *with the letters "IF."*

**(d)** For procedures where an IAF is published, the pilot is advised to expect clearance to the IF at least 5 miles from the fix.

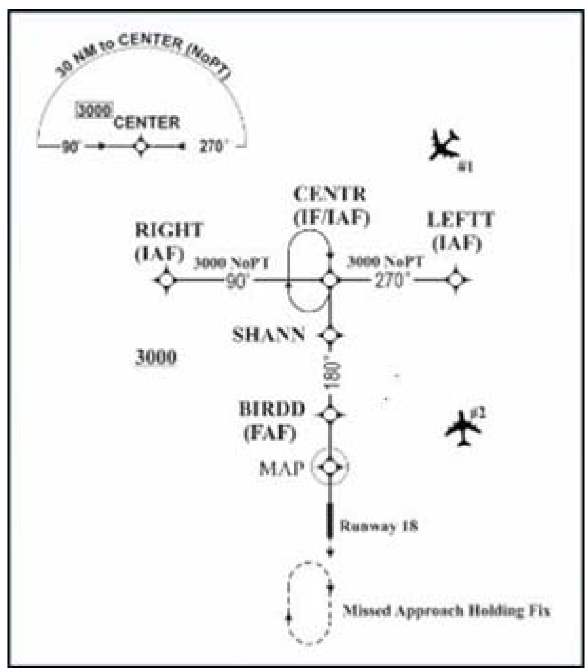
***EXAMPLE−***
*"Expect direct CENTR for RNAV Runway One-Eight Approach."*

**3.** Established on a heading or course direct to a fix between the IF and FAF, at an intercept angle not greater than 30 degrees, and assigned an altitude in accordance with b2.

***EXAMPLE−***
*Aircraft 1 is more than 5 miles from SHANN. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to SHANN is 3,000 feet. SHANN is a step down fix between the IF/IAF (CENTR) and the FAF. To clear Aircraft 1 to SHANN, ATC must ensure the intercept angle for the intermediate segment at SHANN is not greater than 30 degrees and must be cleared to an altitude that will allow a normal descent to the FAF. "Cleared direct SHANN, cross SHANN at or above three thousand, cleared RNAV Runway One-Eight Approach."*

***REFERENCE−***
*FAAO 7110.65, Par 5-6-2, Methods*
*FAAO 7110.65, Chapter 5, Section 9, Radar Arrivals*

***FIG 4−8−4***
**Approach Clearance Example**
**For RNAV Aircraft**




***EXAMPLE−***
*Aircraft 2 cannot be cleared direct to CENTR unless the aircraft is allowed to execute the hold-in-lieu of procedure turn. The intercept angle at that IF/IAF is greater than*

*90 degrees. The minimum altitude for IFR operations (14 CFR Section 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−***
*FAAO 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 paragraph d.

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

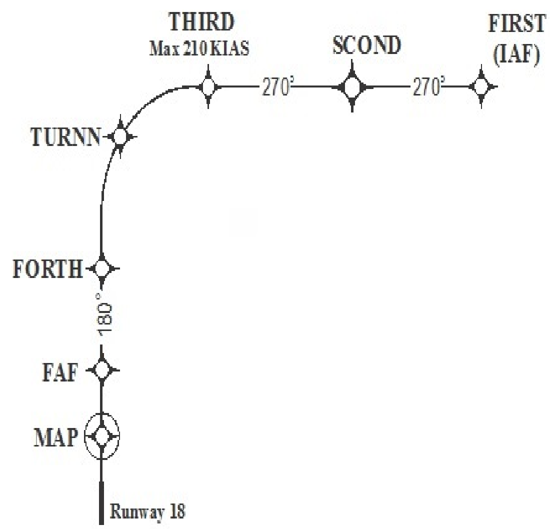
**4.** Do not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

***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.*

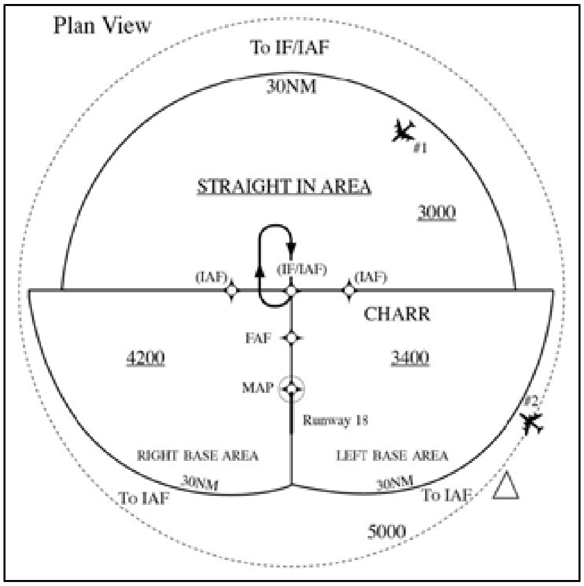
**j.** Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under subpara b1 and b2 above. (See FIG 4−8−6.)

***EXAMPLE−***
*Aircraft 1: The aircraft has crossed the TAA boundary and is therefore established on a segment of the approach. "Cleared R-NAV Runway One-Eight Approach."*

*Aircraft 2: 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**




**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.

**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−***
*FAAO JO 7110.65, Para 2−1−10, NAVAID Malfunctions.*
*FAAO 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. CLEARANCE LIMIT

Issue approach or other clearances, as required, specifying the destination airport as the clearance limit if airport traffic control service is not provided even though this is a repetition of the initial clearance.

***PHRASEOLOGY−***
*CLEARED TO (destination) AIRPORT*

## 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−***
*FAAO 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−***
*FAAO 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 90−42, Traffic Advisory Practices at Airports Without Operating Control Towers.*

## 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. Once an aircraft commences a missed approach, it may be radar vectored.

***NOTE−***
**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.*

**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.*

**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. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible.*

***REFERENCE−***
*FAAO JO 7110.65, Para 4−8−1, Practice Approaches.*
*FAAO JO 7110.65, Para 5−6−3, Vectors Below Minimum Altitude.*
*FAAO JO 7110.65, Para 5−8−3, Successive or Simultaneous Departures.*
*FAAO 8260.19, Flight Procedures and Airspace, Paras 404 and 815.*
*FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Paras 275, 278, 943, 957, and 997.*
*AIM, Paragraph 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, Paragraph 5-1-17, Cold Temperature Operations*
*AIM, Paragraph 5-5-4, Instrument Approach*
*AIM, Paragraph 5-5-5, Missed Approach*

## 4−8−11. PRACTICE 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.

***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.*

**a.** Separation.

**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.

**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−***
*FAAO JO 7210.3, Para 6−4−4, Practice Instrument Approaches.*
*FAAO JO 7210.3, Para 10−4−5, Practice Instrument Approaches.*

**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.

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

**(c)** 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.

***REFERENCE−***
*FAAO JO 7110.65, Para 7−7−5, Altitude Assignments.*

**5.** All VFR aircraft 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 applicable parts of the CFR governing VFR flight.*

**b.** 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−***
*FAAO 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, separation must be provided throughout the missed approach.

***REFERENCE−***
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*

## 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 para 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.*

# Chapter 5. Radar

## Section 1. General

### 5−1−1. PRESENTATION AND EQUIPMENT PERFORMANCE

Provide radar service only if you are personally satisfied that the radar presentation and equipment performance is adequate for the service being provided.

***NOTE−***
*The provision of radar service is not limited to the distance and altitude parameters obtained during the commissioning flight check.*

### 5−1−2. ALIGNMENT ACCURACY CHECK

During relief briefing, or as soon as possible after assuming responsibility for a control position, check the operating equipment for alignment accuracy and display acceptability. Recheck periodically throughout the watch.

***REFERENCE−***
*FAAO JO 7210.3, Chapter 3, Chapter 8, Chapter 9, Chapter 10, and Chapter 11.*
*Comparable Military Directives.*

*TERMINAL*

**a.** Check the alignment of the radar video display by assuring that the video/digital map or overlay is properly aligned with a permanent target of known range and azimuth on the radar display. Where possible, check one permanent target per quadrant.

**b.** Accuracy of the radar video display must be verified for digitized radar systems by using the moving target indicator (MTI) reflectors, fixed location beacon transponders (Parrots), beacon real−time quality control (RTQC) symbols or calibration performance monitor equipment (CPME) beacon targets.

***REFERENCE−***
*FAAO JO 7210.3, Para 3−8−1, Tolerance for Radar Fix Accuracy.*

*EN ROUTE*

**c.** Radar Data Processing (RDP) alignment checking is accomplished by the operational program as part of the certification procedures for system startup and then on a real−time basis during operational hours.

**d.** Ensure the situation display center and altitude limits for the system are appropriate for the operating position.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−14−5, Selected Altitude Limits.*

### 5−1−3. ATC SURVEILLANCE SOURCE USE

Use approved ATC Surveillance Sources.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−1−4, Beacon Range Accuracy.*
*FAAO JO 7110.65, Para 5−2−15, Inoperative or Malfunctioning Interrogator.*

**a.** Secondary radar may be used as the sole display source as follows:

**1.** In Class A airspace.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−2−16, Failed Transponder in Class A Airspace.*
*14 CFR Section 91.135, Operations in Class A Airspace.*

**2.** Outside Class A airspace, or where mix of Class A airspace/non−Class A airspace exists, only when:

**(a)** Additional coverage is provided by secondary radar beyond that of the primary radar, or

**(b)** The primary radar is temporarily unusable or out of service. Advise pilots when these conditions exist, or

***PHRASEOLOGY−***
*PRIMARY RADAR UNAVAILABLE (describe location). RADAR SERVICES AVAILABLE ON TRANSPONDER EQUIPPED AIRCRAFT ONLY.*

***NOTE−***
**1.** *Advisory may be omitted when provided on ATIS and pilot indicates having ATIS information.*

**2.** *This provision is to authorize secondary radar only operations where there is no primary radar available and the condition is temporary.*

**(c)** A secondary radar system is the only source of radar data for the area of service. When the system is used for separation, beacon range accuracy is assured, as provided in para 5−1−4, Beacon Range Accuracy. *TERMINAL.* Advise pilots when these conditions exist.

***NOTE−***
*Advisory may be omitted when provided on ATIS or by other appropriate notice to pilots.*

**b.** *TERMINAL.* Do not use secondary radar only to conduct surveillance (ASR) final approaches unless an emergency exists and the pilot concurs.

**c.** All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS-B and WAM.

***NOTE−***
*Targets derived from ADS-B and/or WAM cannot be used to provide 3NM separation in the EAS. 3NM targets are not derived from ADS-B and/or WAM within the EAS.*

***REFERENCE−***
*JO 7110.65, Para4-1-2, Exceptions.*
*JO 7110.65, Para 4-4-2, Route Structure Transitions*
*JO 7110.65, Para 5-5-1, Application*
*JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes*
*JO 7110.65, Chapter 6, Nonradar*
*JO 7110.65, Para 5-5-4, Minima*
*JO 7210.3 3-6-2 ATC Surveillance Source Use*

## 5−1−4. BEACON RANGE ACCURACY

**a.** You may use beacon targets for separation purposes if beacon range accuracy is verified by one of the following methods:

***NOTE−***
**1.** *The check for verification of beacon range accuracy accomplished by correlation of beacon and primary radar targets of the same aircraft is not a check of display accuracy. Therefore, it is not necessary that it be done using the same display with which separation is being provided, nor the same targets being separated.*

**2.** *Narrowband and Full Digital Automation Systems: Technical operations personnel verify beacon range accuracy for automated narrowband display equipment and Full Digital Terminal Automation Systems. Consequently, further verification by the controller is unnecessary.*

**1.** Correlate beacon and primary targets of the same aircraft (not necessarily the one being provided separation) to assure that they coincide.

**2.** When beacon and primary targets of the same aircraft do not coincide, correlate them to assure that any beacon displacement agrees with the specified distance and direction for that particular radar system.

**3.** Refer to beacon range monitoring equipment where so installed.

**b.** If beacon range accuracy cannot be verified, you may use beacon targets only for traffic information.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−1−3, Radar Use.*

## 5−1−5. ELECTRONIC ATTACK (EA) ACTIVITY

**a.** Refer all EA activity requests to the appropriate center supervisor.

***REFERENCE−***
*FAAO JO 7610.4, Chapter 2, Section 7, Electronic Attack (EA) and Testing Coordination.*

***NOTE−***
*EA activity can subsequently result in a request to apply EA videos to the radar system which may necessitate the decertification of the narrowband search radar. The Systems Engineer should be consulted concerning the effect of EA on the operational use of the narrowband radar prior to approving/disapproving requests to conduct EA activity.*

**b.** When EA activity interferes with the operational use of radar:

**1.** *EN ROUTE.* Request the responsible military unit or aircraft, if initial request was received directly from pilot, to suspend the activity.

**2.** *TERMINAL.* Request suspension of the activity through the ARTCC. If immediate cessation of the activity is required, broadcast the request directly to the EA aircraft on the emergency frequency. Notify the ARTCC of direct broadcast as soon as possible.

**c.** When previously suspended activity will no longer interfere:

**1.** *EN ROUTE.* Inform the NORAD unit or aircraft that it may be resumed.

**2.** *TERMINAL.* Inform the ARTCC or aircraft that it may be resumed. Obtain approval from the ARTCC prior to broadcasting a resume clearance directly to the aircraft.

**d.** In each stop request, include your facility name, type of EA activity (chaff dispensing− "stream"/"burst" or electronic jamming− "buzzer"), radar band affected and, when feasible, expected duration of suspension.

***PHRASEOLOGY−***
*BIG PHOTO (identification, if known) (name) CENTER/TOWER/APPROACH CONTROL.*

*To stop EA activity*:

*STOP STREAM/BURST IN AREA (area name) (degree and distance from facility),*

*or*

*STOP BUZZER ON (frequency band or channel).*

*To resume EA activity*:

*RESUME STREAM/BURST,*

*or*

*RESUME BUZZER ON (frequency band or channel).*

## 5−1−6. SERVICE LIMITATIONS

**a.** When radar mapping is not available, limit radar services to:

**1.** Separating identified aircraft targets.

**2.** Vectoring aircraft to intercept a PAR final approach course.

**3.** Providing radar service in areas that ensure no confliction with traffic on airways, other ATC areas of jurisdiction, restricted or prohibited areas, terrain, etc.

**b.** *EN ROUTE.* When the position symbol associated with the data block falls more than one history behind the actual aircraft target or there is no target symbol displayed, the Mode C information in the data block must not be used for the purpose of determining separation.

**c.** Report radar malfunctions immediately for corrective action and for dispatch of a Notice to Airmen. Advise adjacent ATC facilities when appropriate.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−9 Reporting Essential Flight Information.*
*FAAO JO 7210.3, Chapter 3, Chapter 7, Chapter 10 Section 5, and Chapter 11 Section 2.*

## 5−1−7. ELECTRONIC CURSOR

*TERMINAL*

**a.** An electronic cursor may be used to aid in identifying and vectoring an aircraft and to give finer delineation to a video map. Do not use it as a substitute for a video map or map overlay; e.g., to form intersections, airway boundaries, final approach courses, etc.

**b.** Fixed electronic cursors may be used to form the final approach course for surveillance approaches conducted by military operated mobile radar facilities.

## 5−1−8. MERGING TARGET PROCEDURES

**a.** Except while they are established in a holding pattern, apply merging target procedures to all radar identified:

**1.** Aircraft at 10,000 feet and above.

**2.** Turbojet aircraft regardless of altitude.

***REFERENCE−***
*P/CG Term− Turbojet Aircraft.*

**3.** Presidential aircraft regardless of altitude.

**b.** Issue traffic information to those aircraft listed in subpara a whose targets appear likely to merge unless the aircraft are separated by more than the appropriate vertical separation minima.

***EXAMPLE−***
*"Traffic twelve o'clock, seven miles, eastbound, MD−80, at one seven thousand."*

*"United Sixteen and American Twenty-five, traffic twelve o'clock, one zero miles, opposite direction, eastbound seven twenty seven at flight level three three zero, westbound MD−Eighty at flight level three one zero."*

**c.** When both aircraft in subpara b are in RVSM airspace, and vertically separated by 1,000 feet, if either pilot reports they are unable to maintain RVSM due to turbulence or mountain wave, vector either aircraft to avoid merging with the target of the other aircraft.

***EXAMPLE−***
*"Delta One Twenty Three, fly heading two niner zero, vector for traffic. Traffic twelve o'clock, one zero miles, opposite direction, MD−80 eastbound at flight level three two zero."*

**d.** If the pilot requests, vector his/her aircraft to avoid merging with the target of previously issued traffic.

***NOTE–***
*Aircraft closure rates are so rapid that when applying merging target procedures, controller issuance of traffic must be commenced in ample time for the pilot to decide if a vector is necessary.*

**e.** If unable to provide vector service, inform the pilot.

***NOTE–***
*The phraseology "Unable RVSM due turbulence (or mountain wave)" is only intended for severe turbulence or other weather encounters with altitude deviations of approximately 200 feet or more.*

## 5–1–9. HOLDING PATTERN SURVEILLANCE

Provide radar surveillance of outer fix holding pattern airspace areas, or any portions thereof, shown on your radar scope (displayed on the video map or scribed on the map overlay) whenever aircraft are holding there. Attempt to detect any aircraft that stray outside the area. If you detect an aircraft straying outside the area, assist it to return to the assigned airspace.

## 5–1–10. DEVIATION ADVISORIES

Inform an aircraft when it is observed in a position and on a track which will obviously cause the aircraft to deviate from its protected airspace area. If necessary, help the aircraft to return to the assigned protected airspace.

***NOTE–***
**1.** *RNAV ATS routes have a width of 8 miles and laterally protected airspace of 4 miles on each side of the route centerline*

**2.** *Navigation system performance requirements for operations on RNAV ATS routes require the aircraft system be capable of remaining within 2 miles of the route centerline. Aircraft approaching this limit may be experiencing a navigation system error or failure.*

***REFERENCE–***
*FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*
*FAAO JO 7110.65, Para 7–9–3, Methods.*
*FAAO 7400.2, Para 20-5-3. Lateral Protected Airspace Criteria for RNAV En Route Segments*
*AC90-100A, U.S. Terminal and En Route Area Navigation (RNAV) Operations, Para 8a. Navigation System Accuracy*

## 5–1–11. RADAR FIX POSTING

*EN ROUTE*

A controller is required to manually record at least once the observed or reported time over a fix for each controlled aircraft in their sector of responsibility only when the flight progress recording components of the EAS FDP are not operational.

***REFERENCE–***
*FAAO JO 7210.3, Para 6–1–6, Flight Progress Strip Usage.*
*FAAO JO 7210.3, Para 10–1–8, Flight Progress Strip Usage.*

## 5–1–12. POSITION REPORTING

If necessary, you may request an aircraft to provide an estimate or report over a specific fix. After an aircraft receives the statement "radar contact" from ATC, it discontinues reporting over compulsory reporting points. It resumes normal position reporting when ATC informs it "radar contact lost" or "radar service terminated."

***REFERENCE–***
*P/CG Term– Radar Contact.*

**a.** When required, inform an aircraft of its position with respect to a fix or airway.

***PHRASEOLOGY–***
*OVER/PASSING (fix).*

*(Number of miles) MILES FROM (fix).*

*(Number of miles) MILES (direction) OF (fix, airway, or location).*

*CROSSING/JOINING/DEPARTING (airway or route).*

*INTERCEPTING/CROSSING (name of NAVAID) (specified) RADIAL.*

## 5–1–13. RADAR SERVICE TERMINATION

**a.** Inform aircraft when radar service is terminated.

***PHRASEOLOGY–***
*RADAR SERVICE TERMINATED (nonradar routing if required).*

**b.** Radar service is automatically terminated and the aircraft needs not be advised of termination when:

***NOTE–***
**1.** *Termination of radar monitoring when conducting simultaneous ILS approaches is prescribed in Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.*

**2.** *Termination of radar monitoring where PAR equipment is used to monitor approaches is prescribed in para 5−13−3, Monitor Information.*

**1.** An aircraft cancels its IFR flight plan, except within Class B airspace, Class C airspace, TRSA, or where basic radar service is provided.

**2.** An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.

**3.** At tower-controlled airports where radar coverage does not exist to within $^{1}/_{2}$ mile of the end of the runway, arriving aircraft must be informed when radar service is terminated.

***REFERENCE−***
*FAAO JO 7210.3, Para 10−5−6, Radar Tolerances.*

**4.** *TERMINAL.* An arriving VFR aircraft receiving radar service to a tower-controlled airport within Class B airspace, Class C airspace, TRSA, or where basic radar service is provided has landed, or to all other airports, is instructed to change to tower or advisory frequency.

**5.** *TERMINAL.* An aircraft completes a radar approach.

***REFERENCE−***
*FAAO JO 7110.65, Para 7−6−12, Service Provided When Tower is Inoperative.*

# Section 4. Transfer of Radar Identification

## 5−4−1. APPLICATION

To provide continuous radar service to an aircraft and facilitate a safe, orderly, and expeditious flow of traffic, it is often necessary to transfer radar identification of an aircraft from one controller to another. This section describes the terms, methods, and responsibilities associated with this task. Interfacility and intrafacility transfers of radar identification must be accomplished in all areas of radar surveillance except where it is not operationally feasible. Where such constraints exist, they must be:

**a.** Covered in letters of agreement which clearly state that control will not be based upon a radar handoff, or

**b.** Coordinated by the transferring and receiving controllers for a specified period of time.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−3−8, Coordination with Receiving Facility.*

## 5−4−2. TERMS

**a.** *Handoff.* An action taken to transfer the radar identification of an aircraft from one controller to another controller if the aircraft will enter the receiving controller's airspace and radio communications with the aircraft will be transferred.

**b.** *Radar Contact.* The term used to inform the controller initiating a handoff that the aircraft is identified and approval is granted for the aircraft to enter the receiving controller's airspace.

**c.** *Point Out.* An action taken by a controller to transfer the radar identification of an aircraft to another controller and radio communications will not be transferred.

**d.** *Point Out Approved.* The term used to inform the controller initiating a point out that the aircraft is identified and that approval is granted for the aircraft to enter the receiving controller's airspace, as coordinated, without a communications transfer or the appropriate automated system response.

**e.** *Traffic.* A term used to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

**1.** In response to a handoff or point out;

**2.** In anticipation of a handoff or point out; or

**3.** In conjunction with a request for control of an aircraft.

**f.** *Traffic Observed.* The term used to inform the controller issuing the traffic restrictions that the traffic is identified and that the restrictions issued are understood and will be complied with.

## 5−4−3. METHODS

**a.** Transfer the radar identification of an aircraft by at least one of the following methods:

**1.** Physically point to the target on the receiving controller's display.

**2.** Use landline voice communications.

**3.** Use automation capabilities.

***NOTE−***
*Automated handoff capabilities are only available when FDP is operational.*

**4.** *TERMINAL.* Use the "Modify" or "Quick Look" functions for data transfer between the TRACON and tower cab only if specific procedures are established in a facility directive. The local controller has the responsibility to determine whether or not conditions are adequate for the use of ARTS/STARS data on the BRITE/DBRITE/TDW.

***REFERENCE−***
*FAAO JO 7210.3, Para 11−2−4, Use of Modify and Quick Look Functions.*
*FAAO JO 7210.3, Para 11−8−4, Use of Stars Quick Look Functions.*

**b.** When making a handoff, point-out, or issuing traffic restrictions, relay information to the receiving controller in the following order:

**1.** The position of the target relative to a fix, map symbol, or radar target known and displayed by both the receiving and transferring controller. Mileage from the reference point may be omitted when relaying the position of a target if a full data block associated with the target has been forced on the receiving controller's radar display.

***EXAMPLE−***
*"Point out, Southwest of Richmond VOR . . .."*

**2.** The aircraft identification, as follows:

**(a)** The aircraft call sign, or

**(b)** The discrete beacon code of the aircraft during interfacility point-outs only, if both the receiving and the transferring controllers agree.

***NOTE−***
*Acceptance of a point-out using the discrete beacon code as the aircraft's identification constitutes agreement.*

**(c)** EN ROUTE. The Computer Identification Number (CID) during intra-facility point-outs.

***EXAMPLE−***
*"Point Out, Southwest of Richmond VOR, C-I-D 123…"*

**3.** The assigned altitude, appropriate restrictions, and information that the aircraft is climbing or descending, if applicable, except when inter/intrafacility directives ensure that the altitude information will be known by the receiving controller.

***NOTE−***
*When physically pointing to the target, you do not have to state the aircraft position.*

**4.** Advise the receiving controller of pertinent information not contained in the data block or available flight data unless covered in an LOA or facility directive. Pertinent information may include:

**(a)** Assigned heading.

**(b)** Speed/altitude restrictions.

**(c)** Observed track or deviation from the last route clearance.

**(d)** Any other pertinent information.

***PHRASEOLOGY−***
*HANDOFF/POINT-OUT/TRAFFIC (aircraft position) (aircraft ID),*

*or*

*(discrete beacon code point-out only) (altitude, restrictions, and other pertinent information, if applicable).*

**c.** When receiving a handoff, point-out, or traffic restrictions, respond to the transferring controller as follows:

***PHRASEOLOGY−***
*(Aircraft ID) (restrictions, if applicable) RADAR CONTACT,*

*or*

*(aircraft ID or discrete beacon code) (restrictions, if applicable) POINT-OUT APPROVED,*

*or*

*TRAFFIC OBSERVED,*

*or*

*UNABLE (appropriate information, as required).*

**d.** If any doubt as to target identification exists after attempting confirmation in accordance with this section, apply the provisions of para 5−3−5, Questionable Identification.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−2−17, Validation of Mode C Readout.*

## 5−4−4. TRAFFIC

**a.** When using the term "traffic" for coordinating separation, the controller issuing traffic must issue appropriate restrictions.

**b.** The controller accepting the restrictions must be responsible to ensure that approved separation is maintained between the involved aircraft.

## 5−4−5. TRANSFERRING CONTROLLER HANDOFF

The transferring controller must:

**a.** Complete a radar handoff prior to an aircraft's entering the airspace delegated to the receiving controller.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−14, Coordinate Use of Airspace.*
*FAAO JO 7110.65, Para 2−1−15, Control Transfer.*
*FAAO JO 7110.65, Para 5−4−6, Receiving Controller Handoff.*

**b.** Verbally obtain the receiving controller's approval prior to making any changes to an aircraft's flight path, altitude, speed, or data block information while the handoff is being initiated or after acceptance, unless otherwise specified by a LOA or a facility directive.

**c.** Ensure that, prior to transferring communications:

**1.** Potential violations of adjacent airspace and potential conflicts between aircraft in their own area of jurisdiction are resolved.

**2.** Coordination has been accomplished with all controllers through whose area of jurisdiction the aircraft will pass prior to entering the receiving controller's area of jurisdiction unless otherwise specified by a LOA or a facility directive.

**3.** Restrictions issued to ensure separation are passed to the receiving controller.

**d.** After transferring communications, continue to comply with the requirements of subparas c1 and 2.

**e.** Comply with restrictions issued by the receiving controller unless otherwise coordinated.

**f.** Comply with the provisions of para 2−1−17, Radio Communications Transfer, subparas a and b. To the extent possible, transfer communications when the transfer of radar identification has been accepted.

***NOTE−***
*Before the ARTS/STARS "modify/quick look" function is used to transfer radar identification, a facility directive which specifies communication transfer points is required.*

**g.** Advise the receiving controller of pertinent information not contained in the data block or flight progress strip unless covered in a LOA or facility directive. Pertinent information includes:

**1.** Assigned heading.

**2.** Air speed restrictions.

**3.** Altitude information issued.

**4.** Observed track or deviation from the last route clearance.

**5.** The beacon code if different from that normally used or previously coordinated.

**6.** Any other pertinent information.

**h.** Ensure that the data block is associated with the appropriate target.

**i.** Initiate verbal coordination to verify the position of primary or nondiscrete targets when using the automated handoff functions except for intrafacility handoffs using single-sensor systems or multisensor systems operating in a mosaic RDP mode.

**j.** Initiate verbal coordination before transferring control of a track when "CST," "FAIL," "NONE," "NB," "NX," "IF," "NT", or "TRK" is displayed in the data block.

**k.** Advise the receiving controller if radar monitoring is required.

**l.** Issue restrictions to the receiving controller which are necessary to maintain separation from other aircraft within your area of jurisdiction before releasing control of the aircraft.

**m.** Consider the target being transferred as identified on the receiving controller's display when the receiving controller acknowledges receipt verbally or has accepted an automated handoff.

**n.** Accomplish the necessary coordination with any intervening controllers whose area of jurisdiction is affected by the receiving controller's delay in the climb or the descent of an aircraft through the vertical limits of your area of jurisdiction when the receiving controller advises you of that delay before accepting the transfer of radar identification unless otherwise specified by a LOA or a facility directive.

## 5−4−6. RECEIVING CONTROLLER HANDOFF

The receiving controller must:

**a.** Ensure that the target position corresponds with the position given by the transferring controller or that there is an appropriate association between an automated data block and the target being transferred before accepting a handoff.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−14, Coordinate Use of Airspace.*
*FAAO JO 7110.65, Para 2−1−15, Control Transfer.*
*FAAO JO 7110.65, Para 5−4−5, Transferring Controller Handoff.*

**b.** Issue restrictions that are needed for the aircraft to enter your sector safely before accepting the handoff.

**c.** Comply with restrictions issued by the transferring controller unless otherwise coordinated.

**d.** After accepting a handoff from another controller, confirm the identity of primary target by advising the aircraft of its position, and of a beacon target by observing a code change, an "ident" reply, or a "standby" squawk unless one of these was used during handoff. These provisions do not apply at those towers and GCAs which have been delegated the responsibility for providing radar separation within designated areas by the parent approach control facility and the aircraft identification is assured by sequencing or positioning prior to the handoff.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−9−5, Approach Separation Responsibility.*

**e.** When using appropriate equipment, consider a discrete beacon target's identity to be confirmed when:

**1.** The data block associated with the target being handed off indicates the computer assigned discrete beacon code is being received, or

**2.** You observe the deletion of a discrete code that was displayed in the data block, or

***NOTE−***
*When the aircraft generated discrete beacon code does not match the computer assigned beacon code, the code generated will be displayed in the data block. When the aircraft changes to the assigned discrete code, the code disappears from the data block. In this instance, the observance of code removal from the data block satisfies confirmation requirements.*

**3.** You observe the numeric display of a discrete code that an aircraft has been instructed to squawk or reports squawking.

**f.** Initiate verbal coordination prior to accepting control of a track when "CST," "NAT," "NT," "NONE," "NB," "NX," "OLD," "OL," "AMB," "AM," "TU", or "TRK" is displayed in the data block.

**1.** When an automated interfacility handoff action is initiated and "AMB" or "AM" is displayed in the full data block, advise the other facility that a disparity exists between the position declared by their computer and that declared by your system.

**2.** When an automated inter−facility handoff action is initiated and "NAT," "NT," "TU", or "TRK" is displayed in the full data block, advise the other facility if a disparity exists between the position declared by their computer and the actual target position.

**g.** Advise the transferring controller, prior to accepting the transfer of radar identification, that you will delay the climb or the descent of an aircraft through the vertical limits of the transferring controller's area of jurisdiction, unless otherwise specified in a LOA or a facility directive.

***NOTE−***
*Those en route facilities using HOST software that provides capability for passing interim altitude must include the specific operations and procedures for use of this procedure in a LOA between the appropriate facilities.*

**h.** If you decide, *after* accepting the transfer of radar identification, to delay the aircraft's climb or descent through the vertical limits of the transferring controller's area of jurisdiction, advise the transferring controller of that decision as soon as possible.

***NOTE−***
*Those en route facilities using HOST software that provides capability for passing interim altitude must include the specific operations and procedures for use of this procedure in a LOA between the appropriate facilities.*

## 5−4−7. POINT OUT

**a.** The transferring controller must:

**1.** Obtain verbal approval before permitting an aircraft to enter the receiving controller's delegated airspace. *TERMINAL.* Automated approval may be utilized in lieu of verbal, provided the appropriate automation software is operational (automated point out function), and the procedures are specified in a facility directive/LOA.

**2.** Obtain the receiving controller's approval before making any changes to an aircraft's flight path, altitude, speed, or data block information after the point out has been approved.

**3.** Comply with restrictions issued by the receiving controller unless otherwise coordinated.

**4.** Be responsible for subsequent radar handoffs and communications transfer, including flight data revisions and coordination, unless otherwise agreed to by the receiving controller or as specified in a LOA.

**b.** The receiving controller must:

**1.** Ensure that the target position corresponds with the position given by the transferring controller or that there is an association between a computer data block and the target being transferred prior to approving a point out.

**2.** Be responsible for separation between point out aircraft and other aircraft for which he/she has separation responsibility.

**3.** Issue restrictions necessary to provide separation from other aircraft within his/her area of jurisdiction.

## 5−4−8. AUTOMATED INFORMATION TRANSFER (AIT)

Transfer radar identification, altitude control, and/or en route fourth line control information, without verbal coordination under the following conditions:

**a.** During radar handoff; and

**b.** Via information displayed in full data blocks; and

**c.** Within the same facility, except as provided in Paragraph 5−4−9, Interfacility Automated Information Transfer; and

**d.** When following procedures specified in your facility AIT directive.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−4−11, En Route Fourth Line Data Block Usage.*

## 5−4−9. INTERFACILITY AUTOMATED INFORMATION TRANSFER

*EN ROUTE*

Transfer radar identification without verbal coordination under the following conditions:

**a.** During radar handoff; and

**b.** Via information displayed in full data blocks; and

**c.** On aircraft at assigned altitude in level flight; and

**d.** Only the first sector within the receiving facility must utilize the procedure; and

**e.** When following procedures specified in your facility AIT directive and LOA.

## 5−4−10. PREARRANGED COORDINATION

Prearranged coordination allowing aircraft under your control to enter another controller's area of jurisdiction may only be approved provided procedures are established and published in a facility directive/LOA in accordance with FAAO JO 7210.3, Paragraph 3−6−7, Prearranged Coordination.

***NOTE−***
*Under no circumstances may one controller permit an aircraft to enter another's airspace without proper coordination. Coordination can be accomplished by several means; i.e., radar handoff, automated information transfer, verbal, point−out, and by prearranged coordination procedures identified in a facility directive that clearly describe the correct application. Airspace boundaries should not be permitted to become barriers to the efficient movement of traffic. In addition, complete coordination, awareness of traffic flow, and understanding of each position's responsibility concerning penetration of another's airspace cannot be overemphasized.*

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−14, Coordinate Use of Airspace.*
*FAAO JO 7110.65, Para 5−4−3, Methods.*
*FAAO JO 7110.65, Para 5−4−8, Automated Information Transfer (AIT).*
*FAAO JO 7210.3, Para 3−6−7, Prearranged Coordination.*

## 5−4−11. EN ROUTE FOURTH LINE DATA BLOCK USAGE

**a.** The fourth line of the data block must be displayed. When used for forwarding control information, only the specified messages listed in this section may be used. Any additional control information must be forwarded via other communications methods. Free text may be used by individual sector teams for recording information the team deems appropriate for managing the sector, but must be removed prior to initiation of identification transfer.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−4−5, Transferring Controller Handoff, subpara b.*
*FAAO JO 7110.65, Para 5−4−8, Automated Information Transfer (AIT).*
*FAAO JO 7110.65, Para 5−4−9, Interfacility Automated Information Transfer.*

**b.** The en route fourth line data block area must be used for coordination purposes only in association with radar identified aircraft.

**c.** When automated information transfer (AIT) procedures are applied, en route fourth line usage for transfer of control information must be specifically defined within facility AIT directive.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−4−8, Automated Information Transfer (AIT).*
*FAAO JO 7210.3, Para 4−3−8, Automated Information Transfer (AIT).*

**d.** Coordination format for assigned headings must use the designation character "H" preceding a three−digit number.

***EXAMPLE−***
*H080, H270*

**e.** Aircraft assigned a heading until receiving a fix or joining a published route must be designated with assigned heading format followed by the fix or route.

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

***NOTE–***
**1.** *The notation "PH" may be used to denote present heading.*

**2.** *The character "H" may be omitted as a prefix to the heading assignment only if necessary due to character field limitations, and it does not impede understanding.*

**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
D+2 headings – deviate between.

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

**2.** *The inclusion of a /NAVAID, /waypoint, or /F indicates that the pilot has been authorized to deviate for weather and must rejoin the route at the next NAVAID, waypoint, or fix in the route of flight in accordance with the phraseology in paragraph 2-6-4.*

***EXAMPLE–***
*D90/ATL, DL/KD75U, D090/F*

***3.*** *The absence of a NAVAID, waypoint, or /F indicates that the pilot has been authorized to deviate for weather only, and the receiving controller must provide a clearance to rejoin the route in accordance with paragraph 2-1-15c.*

***EXAMPLE–***
*DN, D20L, D30R, D080+120*

**g.** Coordination format for assigned airspeeds must use the designation character "S" preceding a three−digit number.

***NOTE–***
*A "+" notation may be added to denote an assigned speed at or greater than the displayed value. A "−" notation may be added to denote an assigned speed at or less than the displayed value.*

***EXAMPLE–***
*S210, S250, S250+, S280−*

**h.** Aircraft assigned a Mach number must use the designation "M" preceding the two−digit assigned value.

***EXAMPLE–***
*M80, M80+, M80−*

***REFERENCE–***
*FAAO JO 7110.65, Para 5−4−**1**, En Route Fourth Line Data Block Usage, subpara gNOTE.*

**i.** Aircraft authorized to conduct celestial navigation training within 30 NM of the route centerline specified within the en route clearance.

***EXAMPLE–***
*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.

# Section 6. Vectoring

## 5−6−1. APPLICATION

Vector aircraft:

**a.** In controlled airspace for separation, safety, noise abatement, operational advantage, confidence maneuver, or when a pilot requests.

**b.** In Class G airspace only upon pilot request and as an additional service.

**c.** At or above the MVA or the minimum IFR altitude except as authorized for radar approaches, special VFR, VFR operations, or by Para 5−6−3, Vectors Below Minimum Altitude.

***NOTE−***
*VFR aircraft not at an altitude assigned by ATC may be vectored at any altitude. It is the responsibility of the pilot to comply with the applicable parts of CFR Title 14.*

***REFERENCE−***
*FAAO JO 7110.65, Para 4−5−6, Minimum En Route Altitudes.*
*FAAO JO 7110.65, Para 7−5−2, Priority.*
*FAAO JO 7110.65, Para 7−5−4, Altitude Assignment.*
*FAAO JO 7110.65, Para 7−7−5, Altitude Assignments.*
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*

**d.** In airspace for which you have control jurisdiction, unless otherwise coordinated.

**e.** So as to permit it to resume its own navigation within radar coverage.

**f.** Operating special VFR only within Class B, Class C, Class D, or Class E surface areas.

**g.** Operating VFR at those locations where a special program is established, or when a pilot requests, or you suggest and the pilot concurs.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−4−1, Route Use.*
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*
*FAAO JO 7110.65, Para 7−5−3, Separation.*
*FAAO JO 7110.65, Para 7−6−1, Application.*
*FAAO JO 7110.65, Para 9−4−4, Separation Minima.*
*FAAO JO 7210.3, Chapter 11, Section 1, Terminal VFR Radar Services.*

## 5−6−2. METHODS

**a.** Vector aircraft by specifying:

**1.** Direction of turn, if appropriate, and magnetic heading to be flown, or

***PHRASEOLOGY−***
*TURN LEFT/RIGHT HEADING (degrees).*

*FLY HEADING (degrees).*

*FLY PRESENT HEADING.*

*DEPART (fix) HEADING (degrees).*

**2.** The number of degrees, in group form, to turn and the direction of turn, or

***PHRASEOLOGY−***
*TURN (number of degrees) DEGREES LEFT/RIGHT.*

**3.** For NO-GYRO procedures, the type of vector, direction of turn, and when to stop turn.

***PHRASEOLOGY−***
*THIS WILL BE A NO-GYRO VECTOR,*

*TURN LEFT/RIGHT.*

*STOP TURN.*

**b.** When initiating a vector, advise the pilot of the purpose.

***PHRASEOLOGY−***
*VECTOR TO (fix or airway).*

*VECTOR TO INTERCEPT (name of NAVAID) (specified) RADIAL.*

*VECTOR FOR SPACING.*

*(if appropriate) EXPECT DIRECT (NAVAID, waypoint, fix)*

*VECTOR TO FINAL APPROACH COURSE,*

*or if the pilot does not have knowledge of the type of approach,*

*VECTOR TO (approach name) FINAL APPROACH COURSE.*

***NOTE−***
*Determine optimum routing based on factors such as wind, weather, traffic, pilot requests, noise abatement, adjacent sector requirement, and letters of agreement.*

**c.** When vectoring or approving course deviations, assign an altitude to maintain when:

**1.** The vector or approved deviation is off an assigned procedure which contains altitude instructions, i.e., instrument approach, etc.

**2.** The previously issued clearance included crossing restrictions.

***REFERENCE–***
*FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*

**3.** The vector or approved deviation is off an assigned procedure that contains published altitude restrictions, i.e., SID, STAR, and a clearance to Climb Via/Descend Via has been issued.

**d.** When vectoring or approving an aircraft to deviate off of a procedure that includes published altitude restrictions, advise the pilot if you intend on clearing the aircraft to resume the procedure.

***PHRASEOLOGY–***
*FLY HEADING (degrees), MAINTAIN (altitude), EXPECT TO RESUME (SID, STAR, etc.).*

*DEVIATION (restrictions if necessary) APPROVED, MAINTAIN (altitude) EXPECT TO RESUME (SID, STAR, etc.) AT (NAVAID, fix, waypoint)*

***NOTE–***
*After a Climb Via or Descend Via clearance has been issued, a vector/deviation off of a SID/STAR cancels the altitude restrictions on the procedure. The aircraft's Flight Management System (FMS) may be unable to process crossing altitude restrictions once the aircraft leaves the SID/STAR lateral path. Without an assigned altitude, the aircraft's FMS may revert to leveling off at the altitude set by the pilot, which may be the SID/STAR's published top or bottom altitude.*

**e.** Provide radar navigational guidance until the aircraft is:

**1.** Established within the airspace to be protected for the nonradar route to be flown, or

**2.** On a heading that will, within a reasonable distance, intercept the nonradar route to be flown, and

**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, FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix), RESUME (SID/STAR/transition/procedure).*

***REFERENCE–***
*FAAO JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.*
*FAAO JO 7110.65,Paragraph 4-5-7, Altitude Information*

**f.** Aircraft instructed to resume a procedure which contains restrictions (SID/STAR, etc.) must be issued/reissued all applicable restrictions or must be advised to comply with those restrictions.

***PHRASEOLOGY–***
*RESUME (name/SID/transition/STAR), COMPLY WITH RESTRICTIONS.*

*PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude) CLIMB VIA/DESCEND VIA (SID/STAR)*

***EXAMPLE–***
*"Resume the Mudde One Arrival, comply with restrictions."*
*"Cleared direct Luxor, resume the Ksino One arrival, comply with restrictions."*
*"Cleared direct HITME, cross HITME at or above one one thousand, 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 cancelled.

***NOTE–***
*Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is cancelled 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–***
*FAAO JO 7110.65, Para 7–6–1, Application.*

## 5–6–3. VECTORS BELOW MINIMUM ALTITUDE

Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the radar antenna 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 the following:

**a.** If 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.

**b.** If 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.

***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, terminal radar facilities may vector aircraft below the MVA/MIA within those areas and along those routes described in facility directives.

***REFERENCE−***
*FAAO JO 7210.3, Para 3−9−5, Establishing Diverse Vector Area/s (DVA).*

# Section 9. Radar Arrivals

## 5−9−1. VECTORS TO FINAL APPROACH COURSE

Except as provided in para 7−4−2, Vectors for Visual Approach, vector arriving aircraft to intercept the final approach course:

**a.** At least 2 miles outside the approach gate unless one of the following exists:

**1.** When the reported ceiling is at least 500 feet above the MVA/MIA and the visibility is at least 3 miles (report may be a PIREP if no weather is reported for the airport), aircraft may be vectored to intercept the final approach course closer than 2 miles outside the approach gate but no closer than the approach gate.

**2.** If specifically requested by the pilot, aircraft may be vectored to intercept the final approach course inside the approach gate but no closer than the final approach fix.

EXCEPTION. Conditions 1 and 2 above do not apply to RNAV aircraft being vectored for a GPS or RNAV approach.

**b.** Provide a minimum of 1,000 feet vertical separation between aircraft on opposite base legs unless another form of approved separation is established during turn-on to final approach.

**c.** For a precision approach, at an altitude not above the glideslope/glidepath or below the minimum glideslope intercept altitude specified on the approach procedure chart.

**d.** For a nonprecision approach, at an altitude which will allow descent in accordance with the published procedure.

***NOTE−***
*A pilot request for an "evaluation approach," or a "coupled approach," or use of a similar term, indicates the pilot desires the application of subparas a and b.*

**e.** *EN ROUTE.* The following provisions are required before an aircraft may be vectored to the final approach course:

**1.** The approach gate and a line (solid or broken), depicting the final approach course starting at or passing through the approach gate and extending away from the airport, be displayed on the radar scope; for a precision approach, the line length must extend at least the maximum range of the localizer; for a nonprecision approach, the line length must extend at least 10NM outside the approach gate; and

**2.** The maximum range selected on the radar display is 150 NM; or

**3.** An adjacent radar display is set at 125 NM or less, configured for the approach in use, and is utilized for the vector to the final approach course.

**4.** If unable to comply with subparas 1, 2, or 3 above, issue the clearance in accordance with Para 4−8−1, Approach Clearance.

***REFERENCE−***
*FAAO JO 7110.65, Para 4−8−1, Approach Clearance.*
*FAAO JO 7110.65, Para 5−9−2, Final Approach Course Interception.*

## 5−9−2. FINAL APPROACH COURSE INTERCEPTION

**a.** Assign headings that will permit final approach course interception on a track that does not exceed the interception angles specified in TBL 5−9−1.

***TBL 5−9−1***
**Approach Course Interception Angle**

| Distance from interception point to approach gate | Maximum interception angle |
|---|---|
| Less than 2 miles or triple simultaneous approaches in use | 20 degrees |
| 2 miles or more | 30 degrees<br>(45 degrees for helicopters) |

**b.** If deviations from the final approach course are observed after initial course interception, apply the following:

**1.** Outside the approach gate: apply procedures in accordance with subpara a, if necessary, vector the aircraft for another approach.

**2.** Inside the approach gate: inform the pilot of the aircraft's position and ask intentions.

***PHRASEOLOGY−***
*(Ident) (distance) MILE(S) FROM THE AIRPORT, (distance) MILE(S) RIGHT/LEFT OF COURSE, SAY INTENTIONS.*

***NOTE−***
*The intent is to provide for a track course intercept angle judged by the controller to be no greater than specified by this procedure.*

***REFERENCE–***
*FAAO JO 7110.65, Chapter 5, Section 9, Radar Arrivals, and Section 10, Radar Approaches– Terminal.*

**c.** *EN ROUTE.* When using a radar scope range above 125 NM, the controller must solicit and receive a pilot report that the aircraft is established on the final approach course. If the pilot has not reported established by the final approach gate, inform the pilot of his/her observed position and ask intentions.

***NOTE–***
*It may be difficult to accurately determine small distances when using very large range settings.*

## 5–9–3. VECTORS ACROSS FINAL APPROACH COURSE

Inform the aircraft whenever a vector will take it across the final approach course and state the reason for such action.

***NOTE–***
*In the event you are unable to so inform the aircraft, the pilot is not expected to turn inbound on the final approach course unless approach clearance has been issued.*

***PHRASEOLOGY–***
*EXPECT VECTORS ACROSS FINAL FOR (purpose).*

***EXAMPLE–***
*"EXPECT VECTORS ACROSS FINAL FOR SPACING."*

***REFERENCE–***
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–4. ARRIVAL INSTRUCTIONS

Issue all of the following to an aircraft before it reaches the approach gate:

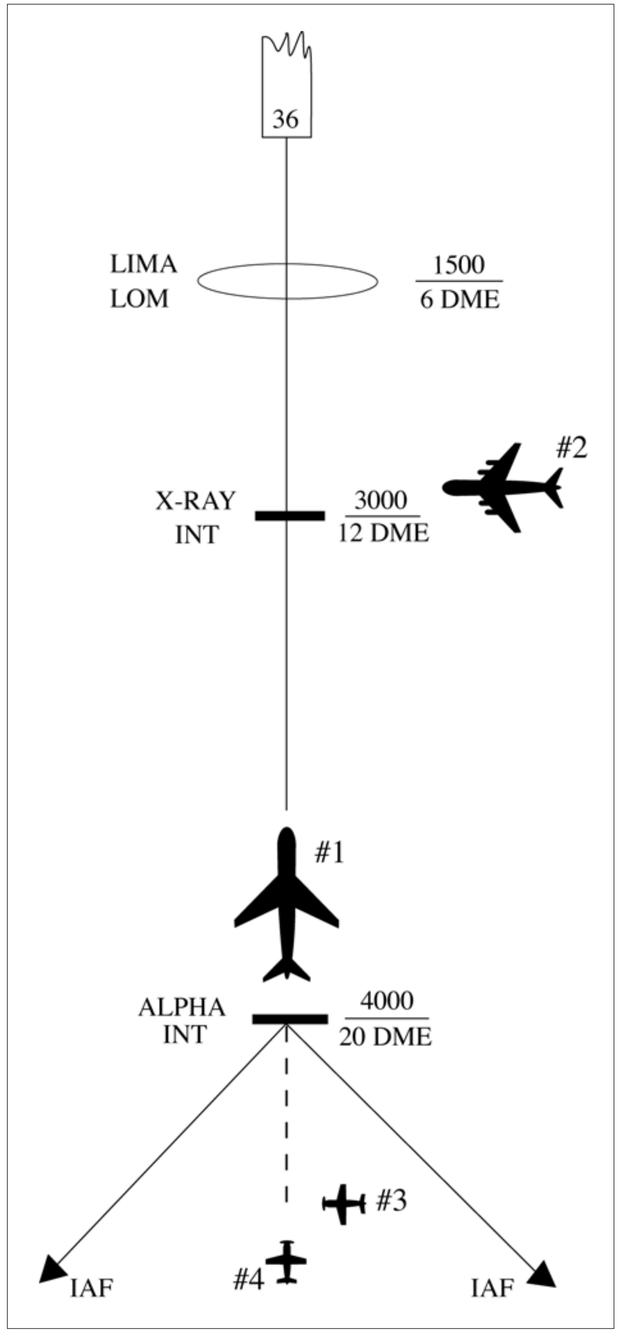
**a.** Position relative to a fix on the final approach course. If none is portrayed on the radar display or if none is prescribed in the procedure, issue position information relative to the navigation aid which provides final approach guidance or relative to the airport.

**b.** Vector to intercept the final approach course if required.

**c.** Approach clearance except when conducting a radar approach. Issue approach clearance only after the aircraft is:

**1.** Established on a segment of a published route or instrument approach procedure, or see FIG 5–9–1 Example 1.

***FIG 5–9–1***
**Arrival Instructions**



***EXAMPLE−***
**1.** *Aircraft 1 was vectored to the final approach course but clearance was withheld. It is now at 4,000 feet and established on a segment of the instrument approach procedure. "Seven miles from X-RAY. Cleared I−L−S runway three six approach." (See FIG 5−9−1.)*

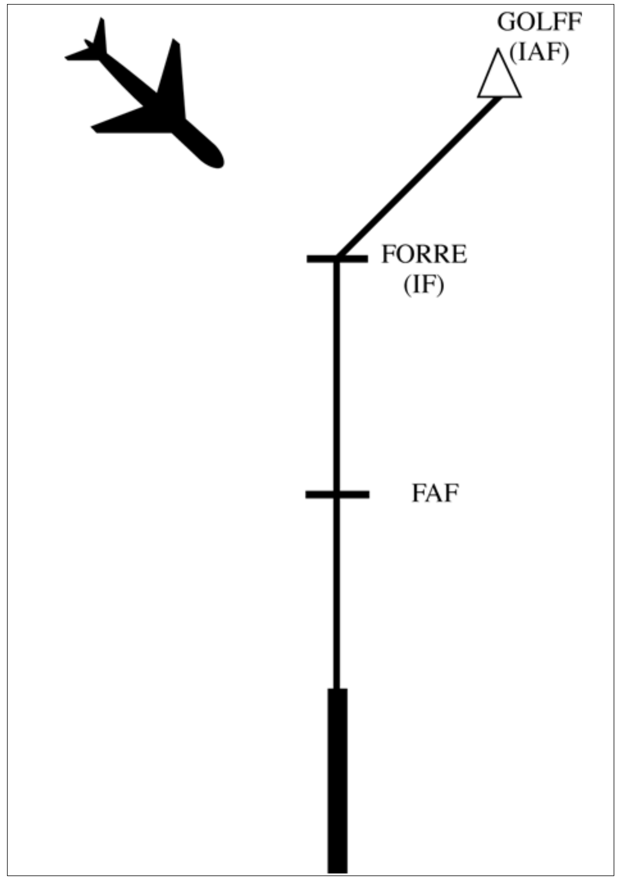
**2.** *Aircraft 2 is being vectored to a published segment of the final approach course, 4 miles from LIMA at 2,000 feet. The MVA for this area is 2,000 feet. "Four miles from LIMA. Turn right heading three four zero. Maintain two thousand until established on the localizer. Cleared I−L−S runway three six approach." (See FIG 5−9−1.)*

**3.** *Aircraft 3 is being vectored to intercept the final approach course beyond the approach segments, 5 miles from Alpha at 5,000 feet. the MVA for this area is 4,000 feet. "Five miles from Alpha. Turn right heading three three zero. Cross Alpha at or above four thousand. Cleared I−L−S runway three six approach." (See FIG 5−9−1.)*

**4.** *Aircraft 4 is established on the final approach course beyond the approach segments, 8 miles from Alpha at 6,000 feet. The MVA for this area is 4,000 feet. "Eight miles from Alpha. Cross Alpha at or above four thousand. Cleared I−L−S runway three six approach." (See FIG 5−9−1.)*

**2.** Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure.

***FIG 5−9−2***
**Arrival Instructions**




***EXAMPLE−***
*The aircraft is being vectored to the intermediate fix FORRE for an RNAV approach. "Seven miles from FOORE, cleared direct FORRE, cross FORRE at or above four thousand, cleared RNAV runway one eight approach."*

***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.** *Aircraft being vectored to the intermediate fix in FIG 5−9−2 must meet all the provisions described in subpara 4−8−1h2.*

**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–*
*FAAO 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–*
*FAAO 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–*
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.*
*FAAO JO 7110.65, Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.*

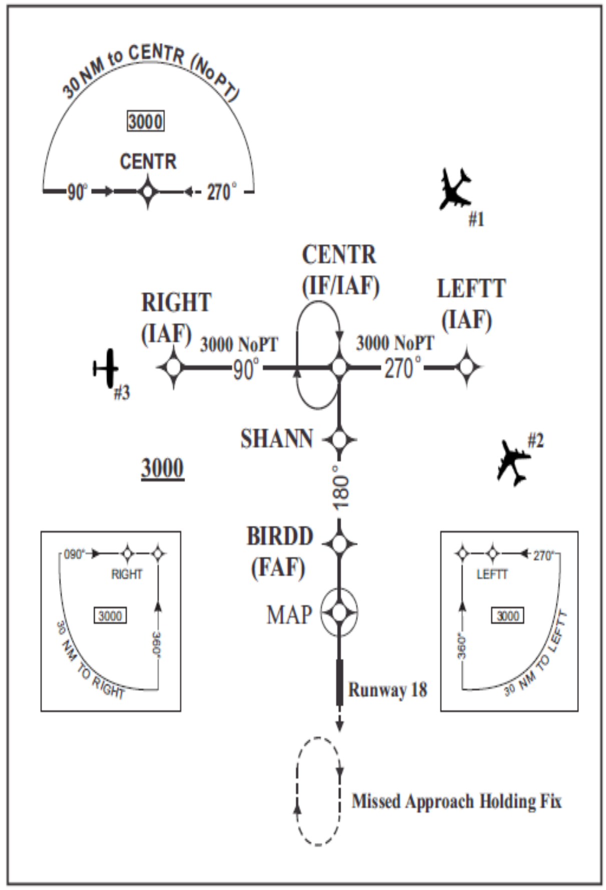
**e.** Where a Terminal Arrival Area (TAA) has been established to support RNAV approaches, inform the aircraft of its position relative to the appropriate IAF and issue the approach clearance. (See FIG 5–9–3.)

*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−***
*FAAO JO 7110.65, Para 2−1−19, Wake Turbulence.*
*FAAO JO 7110.65, Section 5, Radar Separation, Para 5−5−1, Application.*
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*
*FAAO JO 7110.65, Para 5−5−4, Minima.*
*FAAO JO 7210.3, Para 2−1−15, Authorization for Separation Services by Towers.*

**b.** When timed approaches are being conducted, the radar controller must maintain the radar separation specified in Para 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−***
*FAAO JO 7110.65, Para 5−4−6, Receiving Controller Handoff.*
*FAAO JO 7110.65, Para 5−9−2, Final Approach Course Interception.*
*FAAO JO 7110.65, Para 5−9−6, Parallel Dependent Approaches.*
*FAAO JO 7110.65, Para 6−7−2, Approach Sequence.*

## 5−9−6. SIMULTANEOUS DEPENDENT APPROACHES

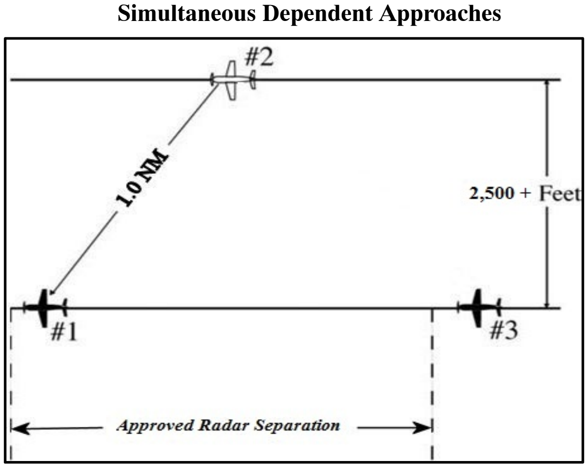
*TERMINAL*

**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.

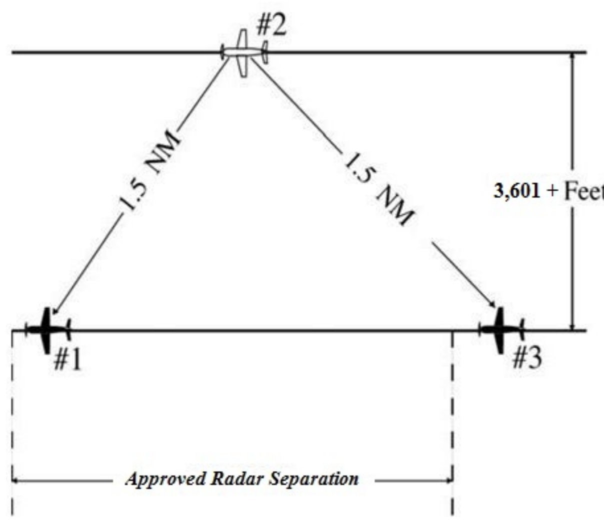
***FIG 5−9−4***
**Simultaneous Dependent Approaches**




***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 4,300 feet apart.

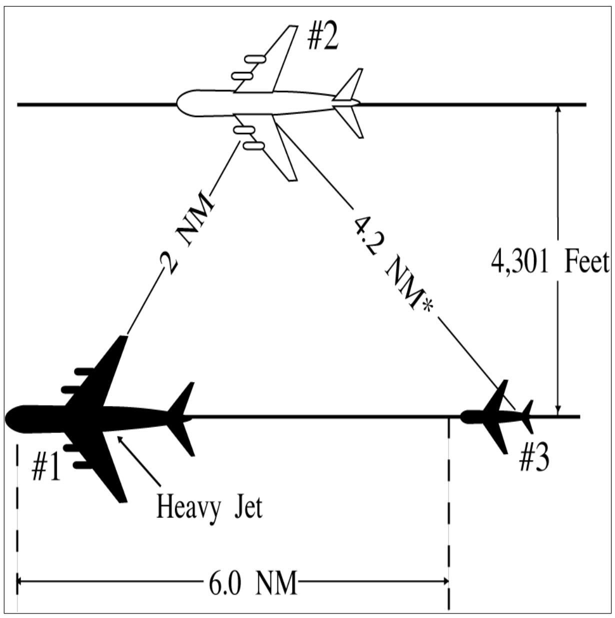
***FIG 5−9−5***
**Simultaneous Dependent Approaches**



*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 4,300 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 4.2 miles.*

**5.** Provide the minimum approved radar separation between aircraft on the same final approach course.

*REFERENCE−*
*FAAO JO 7110.65, Section 5, Radar Separation, Para 5−5−4 , Minima.*

**b.** The following conditions are required when applying the minimum radar separation on adjacent final approach courses allowed in subparagraph a:

*NOTE−*
**1.** *Simultaneous dependent approaches involving an RNAV approach may only be conducted when (GPS) appears in the approach title or a chart note states that GPS is required.*

**2.** *Simultaneous dependent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches to adjacent runways.*

**1.** Apply this separation standard only after aircraft are established on the parallel final approach course.

**2.** Straight-in landings will be made.

**3.** Missed approach procedures do not conflict.

**4.** Aircraft are informed that approaches to both runways are in use. This information may be provided through the ATIS.

**5.** Approach control must have the interphone capability of communicating directly with the local controller at locations where separation responsibility has not been delegated to the tower.

*NOTE−*
*The interphone capability is an integral part of this procedure when approach control has the sole separation responsibility.*

*REFERENCE−*
*FAAO JO 7110.65, Para 5−9−5 , Approach Separation Responsibility.*
*FAAO JO 7210.3, Para 2−1−15, Authorization for Separation Services by Towers.*

**c.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight, such as surface wind direction and 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−*
*FAAO JO 7110.65, Para 5−9−2 , Final Approach Course Interception.*

## 5−9−7. SIMULTANEOUS INDEPENDENT APPROACHES− DUAL & TRIPLE

*TERMINAL*

**a.** Apply the following minimum separation when conducting simultaneous independent approaches:

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn-on to parallel final approach.

*NOTE−*
**1.** *During triple parallel approaches, no two aircraft will be assigned the same altitude during turn-on. All three aircraft will be assigned altitudes which differ by a minimum of 1,000 feet. Example: 3,000, 4,000, 5,000; 7,000, 8,000, 9,000.*

**2.** *Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.*

**2.** Dual parallel runway centerlines are at least 3,600 feet apart, or dual parallel runway centerlines are at least 3,000 feet apart with a 2.5° to 3.0° offset approach to either runway and the airport field elevation is 2,000 feet MSL or less.

***NOTE–***
*Airport field elevation requirement does not apply to dual parallel runways that are 4,300 feet or more apart.*

**3.** Triple parallel approaches may be conducted under one of the following conditions:

**(a)** Parallel runway centerlines are at least 3,900 feet apart and the airport field elevation is 2,000 feet MSL or less; or

**(b)** Parallel runway centerlines are at least 3,000 feet apart, a 2.5° to 3.0° offset approach to both outside runways, and the airport field elevation is 2,000 feet MSL or less; or

**(c)** Parallel runway centerlines are at least 3,000 feet apart, a single 2.5° to 3.0° offset approach to either outside runway while parallel approaches to the remaining two runways are separated by at least 3,900 feet, and the airport field elevation is 2,000 feet MSL or less.

**4.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

**b.** A color digital display set to a 4 to 1 (4:1) aspect ratio (AR) with visual and aural alerts, such as the STARS final monitor aid (FMA), and a surveillance update rate at least 4.8 seconds must be used to monitor approaches where:

**1.** Dual parallel runway centerlines are at least 3,000 and no more than 4,300 feet apart.

**2.** Triple parallel runway centerlines are at least 3,000 but less than 5,000 feet apart and the airport field elevation is 2,000 feet MSL or less.

**3.** Triple parallel approaches to airports where the airport field elevation is more than 2,000 feet MSL require use of the FMA system and an approved FAA aeronautical study.

***NOTE–***
*FMA is not required to monitor the NTZ for runway centerlines greater than 4,300 feet for dual runways, and 5,000 feet or greater for triple operations.*

**c.** FUSION must be discontinued on the FMA displays and set to a single-sensor, when conducting final monitoring activities.

***REFERENCE–***
*FAAO JO 7110.65, Para 5–5–4 , Minima.*

**d.** The following conditions must be met when conducting dual or triple simultaneous independent approaches:

***NOTE–***
*Simultaneous independent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches.*

***REFERENCE–***
*FAAO 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 at least 2,000 feet wide 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.

**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. 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 para 5−5−2, Target Separation, apply also.*

**e.** The following procedures must be used by the final monitor controllers:

**1.** 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.*

**2.** 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.

***PHRASEOLOGY−***
*TRAFFIC ALERT, (call sign), TURN (right/left) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude).*

**3.** 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.

**4.** Do not inform the aircraft when radar monitoring is terminated.

**5.** Do not apply the provisions of Paragraph 5-13-1, Monitor on PAR Equipment, for simultaneous independent approaches.

**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 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−***
*FAAO JO 7110.65, Para 5−1−13 , Radar Service Termination.*
*FAAO 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*

**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*

**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.

**c.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn-on to parallel or offset final approach.

***NOTE−***
*Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.*

**d.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−5−4 , Minima.*

**e.** The following conditions must be met when conducting dual and triple PRM approaches:

**1.** Straight-in landings will be made.

**2.** All appropriate communication, navigation, and surveillance systems are operating normally.

**3.** Inform aircraft that PRM approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

**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 at least 2,000 feet wide 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.

**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.

**7.** Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. Facility directives must define the responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course.

***NOTE–***
*The aircraft is considered the center of the digitized target for the purposes of ensuring an aircraft does not penetrate the NTZ.*

**f.** The following procedures must be used by the final monitor controllers:

**1.** 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 immediately to the correct final approach course when aircraft are observed to overshoot the turn-on or 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–***
*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 (left/right) IMMEDIATELY HEADING (DEGREES), CLIMB 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.

**6.** Do not apply the provisions of Paragraph 5-13-1, Monitor on PAR Equipment, for PRM approaches.

**g.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when PRM approaches 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 the approach in use.

***REFERENCE–***
*FAAO JO 7110.65, Para 5–1–13, Radar Service Termination.*
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)– HIGH UPDATE RADAR

***TERMINAL***

**a.** Simultaneous offset independent approaches (SOIA) may be conducted at FAA designated airports that have an authorization issued by the Director, Operations-Headquarters, AJT-2, in co-ordination with AFS with parallel runways that have centerlines separated by less than 3,000 feet with one final approach course offset by 2.5 to 3.0 degrees using a high update rate surveillance system with a 1.0−second radar update; 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.*

**2.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

**3.** Provide the minimum applicable radar separation between the trailing offset aircraft of a leading SOIA pair and the lead straight-in aircraft in the subsequent SOIA pair when the parallel runways have centerlines separated by less than 2,500 feet.

***REFERENCE−***
*FAAO JO 7110.65, Para 5−5−4 , Minima.*

**b.** The following conditions are required when applying the minimum separation between lead straight-in and offset trailing approaches with glideslope courses or vertical navigation authorized in subparagraph a above:

**1.** Straight−in landings will be made.

**2.** All appropriate communication, navigation, and surveillance systems are operating normally.

**3.** Inform aircraft that PRM approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

**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.** A No Transgression Zone (NTZ) at least 2,000 feet wide is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The NTZ begins prior to the point where adjacent inbound aircraft first lose vertical separation and extends to a point coincident with the location of the offset approach MAP. 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.

**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.

**7.** Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. Facility directives must define the responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course and the minimum applicable longitudinal separation between the trailing offset aircraft of a leading SOIA pair and the lead straight in aircraft in the subsequent SOIA pair when the parallel runways have centerlines separated by less than 2,500 feet.

***NOTE−***
*The aircraft is considered the center of the digitized target for that aircraft for the purposes of ensuring an aircraft does not penetrate the NTZ.*

**c.** The following procedures must be used by the final monitor controllers:

**1.** 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 immediately to the correct final approach course when aircraft are observed to overshoot the turn−on or continue on a track which will penetrate the NTZ.

***PHRASEOLOGY−***
*YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO 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–*
*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 (left/right) IMMEDIATELY HEADING (DEGREES), CLIMB AND MAINTAIN (altitude).*

**4.** Terminate radar monitoring when one of the following occurs:

**(a)** The lead straight in aircraft passes the end of the NTZ nearest the runway threshold.

**(b)** The trailing offset aircraft passes the end of the NTZ nearest the runway threshold and has reported the lead straight in aircraft in sight.

**(c)** The aircraft begins the visual segment of the approach.

**5.** Do not inform the aircraft when radar monitoring is terminated.

**6.** Do not apply the provisions of paragraph 5-13-1, Monitor on PAR Equipment, for simultaneous approaches.

**d.** Advise the pilot of the trailing offset aircraft of traffic on the adjacent lead straight-in approach course, if that traffic will be a factor in the visual segment of the approach. The provisions of Paragraphs 7-2-1, Visual Separation, subparagraph a2**,** concerning visual separation between aircraft being provided by the tower must not be applied to aircraft conducting SOIAs.

*NOTE–*
*Once advised, the pilot is authorized to continue past the offset approach MAP if all of the following conditions are met: The pilot has the straight-in approach traffic in sight and expects the traffic to remain in sight; the pilot advises ATC that the traffic is in sight; and the pilot has the runway environment in sight. Otherwise, it is the pilot's responsibility to execute a missed approach at the offset approach MAP.*

**e.** Ensure that the trailing offset aircraft is positioned to facilitate the flight crew's ability to see the lead straight in traffic from the nominal clear-of-clouds point to the offset approach MAP so that the flight crew can remain separated from that traffic visually from the offset approach MAP to the runway threshold.

*NOTE–*
*After accepting a clearance for an offset PRM approach, pilots must remain on the offset approach course until passing the offset approach MAP prior to alignment with the runway centerline. Between the offset approach MAP and the runway threshold, the pilot of the offset approach aircraft assumes visual separation responsibility from the aircraft on the straight-in approach, which means maneuvering the aircraft as necessary to avoid the straight in approach traffic until landing, and providing wake turbulence avoidance, if necessary.*

**f.** In the visual segment between the offset approach MAP and the runway threshold, if the pilot of the trailing offset aircraft loses visual contact with the lead straight-in traffic, the pilot must advise ATC as soon as practical and follow the published missed approach procedure. If necessary, issue alternate missed approach instructions.

**g.** Wake turbulence requirements between aircraft on adjacent final approach courses inside the offset approach MAP are as follows (standard in-trail wake separation must be applied between aircraft on the same approach course):

**1.** When runways are at least 2,500 feet apart, there are no wake turbulence requirements between aircraft on adjacent final approach courses.

**2.** For runways less than 2,500 feet apart, whenever the ceiling is greater than or equal to 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses need not be applied.

**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 Para 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, Operations-Headquarters, AJT-2. 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–***
*FAAO JO 8260.49, Para 13.0, Wake Turbulence Requirements.*
*FAAO JO 7210.3, Para 10–4–6, Simultaneous Independent Approaches.*
*FAAO JO 7110.65, Para 2–1–20 , Wake Turbulence Cautionary Advisories.*
*FAAO 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–***
*FAAO JO 7110.65, Para 5–1–13 , Radar Service Termination.*
*FAAO 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

**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 an RNAV (RNP) approach that contains a Radius-to-Fix (RF) leg and an aircraft conducting a straight-in ILS/RNAV with vertical guidance/GLS or another RNAV (RNP) approach with an RF leg until both aircraft are established on their respective approach procedures. Ensure dual RNAV (RNP) approaches that contain RF legs are limited to aircraft approaching from opposite downwinds or base legs and all approach pairings must be conducted so that the approach courses do not overlap.

***REFERENCE–***
*FAAO JO 7210.3, Paragraph 10-4-7, Simultaneous Widely-Spaced Parallel Operations*

**2.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

***REFERENCE–***
*FAAO 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 subpara 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 and monitor responsibility 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)*

**3.** Do not inform the aircraft when radar monitoring is terminated.

**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−***

*FAAO 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 FAAO JO 7110.65, Paragraph 2-1-20, Wake Turbulence Cautionary Advisories.

# Section 13. Use of PAR for Approach Monitoring− Terminal

## 5−13−1. MONITOR ON PAR EQUIPMENT

USAF not applicable. Aircraft conducting precision or nonprecision approaches must be monitored by PAR equipment if the PAR final approach course coincides with the NAVAID final approach course from the final approach fix to the runway and one of the following conditions exists:

*NOTE−*
**1.** *The provisions of this section do not apply to monitoring simultaneous approaches.*

**2.** *This procedure is used in PAR facilities operated by the FAA and other military services at joint-use civil/military locations and military installations during the operational hours of the PAR.*

**a.** The reported weather is below basic VFR minima.

**b.** ***USA Not applicable.*** At night.

**c.** Upon request of the pilot.

*REFERENCE−*
*FAAO JO 7110.65, Para 5−9−7, Simultaneous Independent Approaches− Dual & Triple.*

## 5−13−2. MONITOR AVAILABILITY

**a.** Inform the aircraft of the frequency on which monitoring information will be transmitted if it will not be the same as the communication frequency used for the approach.

*PHRASEOLOGY−*
*RADAR MONITORING ON LOCALIZER VOICE (frequency),*

*and if applicable,*

*CONTACT (terminal control function) (frequency, if required) AFTER LANDING.*

**b.** If the approach is not monitored, inform the aircraft that radar monitoring is not available.

*PHRASEOLOGY−*
*RADAR MONITORING NOT AVAILABLE.*

**c.** If conditions prevent continued monitor after the aircraft is on final approach, advise the pilot. State the reason and issue alternate procedures as appropriate.

*PHRASEOLOGY−*
*(Reason), RADAR MONITORING NOT AVAILABLE, (alternative instructions).*

*NOTE−*
*Approach monitoring is a vital service, but during the approach, the controller acts primarily as a safety observer and does not actually guide the aircraft. Loss of the radar monitoring capability (and thus availability) is no reason to terminate an otherwise good instrument approach. Advise the pilot that radar contact has been lost (or other reason as appropriate), that radar monitoring is not available, and of actions for the pilot to take in either proceeding with or breaking off the approach; i.e., contact tower, remain on PAR frequency, etc.*

## 5−13−3. MONITOR INFORMATION

When approaches are monitored, take the following action:

**a.** Advise the pilot executing a nonprecision approach that glidepath advisories are not provided. Do this prior to the pilot beginning the final descent.

*PHRASEOLOGY−*
*GLIDEPATH ADVISORIES WILL NOT BE PROVIDED.*

**b.** Inform the aircraft when passing the final approach fix (nonprecision approaches) or when passing the outer marker or the fix used in lieu of the outer marker (precision approaches).

*PHRASEOLOGY−*
*PASSING (FIX).*

**c.** Advise the pilot of glidepath trend information (precision approaches) and course trend information to indicate target position and movement with respect to the elevation or azimuth cursor when the aircraft target corresponds to a position of well above/below the glidepath or well left/right of course and whenever the aircraft exceeds the radar safety limits. Repeat if no correction is observed.

*EXAMPLE−*
*Course trend information:*
*"(Ident), well right/left of P−A−R course, drifting further right/left."*

*Glidepath trend information:*
*"(Ident), well above/below P−A−R glidepath."*

*REFERENCE−*
*FAAO JO 7110.65, Para 5−12−4, Glidepath and Course Information.*

**d.** If, after repeated advisories, the aircraft is observed proceeding outside the safety limits or a radical target deviation is observed, advise the aircraft if unable to proceed visually, to execute a missed approach. Issue a specific altitude and heading if a procedure other than the published missed approach is to be executed.

***PHRASEOLOGY−***
*(Position with respect to course or glidepath). IF NOT VISUAL, ADVISE YOU EXECUTE MISSED APPROACH (alternative instructions).*

**e.** Provide monitor information until the aircraft is over the landing threshold or commences a circling approach.

# Section 2. Visual Separation

## 7-2-1. VISUAL SEPARATION

Visual separation may be applied when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, and aircraft position. Weather conditions must allow the aircraft to remain within sight until other separation exists.

***REFERENCE-***
*FAAO JO 7110.65, Para 2-1-20, Wake Turbulence Cautionary Advisories.*
*FAAO JO 7110.65, Para 2-1-21, Traffic Advisories.*
*FAAO JO 7110.65, Para 3-1-9, Use of Tower Radar Displays.*
*FAAO JO 7110.65, Para 5-9-5, Approach Separation Responsibility.*
*FAAO JO 7110.65, Para 7-4-1, Visual Approach.*
*FAAO JO 7110.65, Para 7-4-2, Vectors for Visual Approach.*
*FAAO JO 7110.65, Para 7-4-4, Approaches to Multiple Runways.*
*P/CG Term- Visual Approach.*
*P/CG Term- Visual Separation.*

**a.** TERMINAL. Visual separation may be applied between aircraft up to but not including FL180 under the following conditions:

**1.** Tower-applied visual separation.

**(a)** Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately with applicable military aircraft as prescribed in Paragraph 3-9-3, Departure Control Instructions, subparagraph a2.

**(b)** The tower visually observes the aircraft, issues timely traffic advisories, and provides visual separation between the aircraft.

**(c)** Issue control instructions as necessary to ensure continued separation between the applicable aircraft.

**(d)** Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation.

**(e)** The use of tower-applied visual separation is not authorized when wake turbulence separation is required.

**(f)** Adjacent airports with operating ATCTs are not authorized to apply visual separation between their traffic and the other ATCT's traffic.

**2.** Pilot-applied visual separation.

**(a)** Maintain communication with at least one of the aircraft involved and ensure there is an ability to communicate with the other aircraft.

**(b)** The pilot sees another aircraft and is instructed to maintain visual separation from the aircraft as follows:

**(1)** Tell the pilot about the other aircraft. Include position, direction, type, and, unless it is obvious, the other aircraft's intention.

**(2)** Obtain acknowledgment from the pilot that the other aircraft is in sight.

**(3)** Instruct the pilot to maintain visual separation from that aircraft.

***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*

***NOTE-***
*Towers must use the procedures contained in Paragraph 3-1-6, Traffic Information, Subparagraph b or c, as appropriate.*

**(c)** If the pilot reports the traffic in sight and will maintain visual separation from it (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.*

***REFERENCE-***
*FAAO JO 7110.65, Para 5-4-5, Transferring Controller Handoff*

(d) If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

*PHRASEOLOGY−*
*(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.*

(e) Advise the pilots if the 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−*
*"Targets appear likely to merge."*

(f) Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive.

*REFERENCE−*
*FAAO JO 7210.3, Para 4-3-1, Letters of Agreement*

**b.** *EN ROUTE.* Visual separation may be used up to but not including FL 180 when the following conditions are met:

**1.** Direct communication is maintained with one of the aircraft involved and there is an ability to communicate with the other.

**2.** A pilot sees another aircraft and is instructed to maintain visual separation from it as follows:

(a) Tell the pilot about the other aircraft including position, direction, and type. If it is not obvious, include the other aircraft's intentions.

*REFERENCE−*
*FAAO JO 7110.65, Para 2−1−21, Traffic Advisories.*

(b) Obtain acknowledgment from the pilot that the other aircraft is in sight.

(c) Instruct the pilot to maintain visual separation from that aircraft.

*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) Advise the pilot if the targets appear likely to converge.

(f) If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

*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−*
*FAAO JO 7110.65, Para 7−4−1, Visual Approach.*
*FAAO 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 para 2−1−20.

**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−***
*FAAO JO 7110.65, Para 4−8−11, Practice Approaches.*
*FAAO JO 7110.65, Para 5−6−1, Application.*
*FAAO JO 7110.65, Para 7−4−2, Vectors for Visual Approach.*
*FAAO JO 7110.65, Para 7−6−1, Application.*
*FAAO JO 7110.65, Para 7−7−1, Application.*
*FAAO JO 7110.65, Para 7−7−2, Issuance of EFC.*
*FAAO JO 7110.65, Para 7−7−3, Separation.*
*FAAO JO 7110.65, Para 7−7−4, Helicopter Traffic.*
*FAAO JO 7110.65, Para 7−7−5, Altitude Assignments.*
*FAAO JO 7110.65, Para 7−7−6, Approach Interval.*
*FAAO JO 7110.65, Para 7−7−7, TRSA Departure Information.*
*FAAO JO 7110.65, Para 7−8−2, Class C Services.*
*FAAO JO 7110.65, Para 7−8−3, Separation.*
*FAAO JO 7110.65, Para 7−8−4, Establishing Two−Way Communications.*
*FAAO JO 7110.65, Para 7−8−5, Altitude Assignments.*
*FAAO JO 7110.65, Para 7−8−6, Exceptions.*
*FAAO JO 7110.65, Para 7−9−1, Application.*
*FAAO JO 7110.65, Para 7−9−3, Methods.*
*FAAO JO 7110.65, Para 7−9−4, Separation.*
*FAAO JO 7110.65, Para 7−9−6, Helicopter Traffic.*
*FAAO 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 to the airport of intended landing; it is not an instrument approach procedure. Also, there is no missed approach segment. An aircraft unable to complete a visual approach must be handled as any go-around and appropriate separation must be provided.

***REFERENCE−***
*FAAO JO 7110.65, Para 2−1−20, Wake Turbulence Cautionary Advisories.*
*FAAO JO 7110.65, Para 3−10−2, Forwarding Approach Information by Nonapproach Control Facilities.*
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*
*FAAO JO 7110.65, Para 7−4−4, Approaches to Multiple Runways.*

## 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−***
*FAAO JO 7110.65, Para 5−9−1, Vectors to Final Approach Course.*
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*
*FAAO JO 7110.65, Para 7−4−3, Clearance for Visual Approach.*
*FAAO JO 7110.65, Para 7−4−4, Approaches to Multiple Runways.*
*FAAO JO 7110.65, Para 7−6−7, Sequencing.*
*FAAO 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.

***PHRASEOLOGY−***
*(Call sign) (control instructions as required) CLEARED VISUAL APPROACH RUNWAY (number);*

*or*

*(Call sign) (control instructions as required) CLEARED VISUAL APPROACH TO (airport name)*

*(and if appropriate)*

*WEATHER NOT AVAILABLE OR VERIFY THAT YOU HAVE THE (airport) WEATHER.*

***REFERENCE−***
*FAAO JO 7110.65, Para 7−2−1, Visual Separation.*

**c.** Clear an aircraft for a visual approach when:

**1.** The aircraft is number one in the approach sequence, or

**2.** The aircraft is to follow a preceding aircraft and the pilot reports the preceding aircraft in sight and is instructed to follow it, or

*NOTE−*
*The pilot need not report the airport/runway in sight.*

**3.** The pilot reports the airport or runway in sight but not the preceding aircraft. Radar separation must be maintained until visual separation is provided.

**d.** All aircraft following a heavy, or a small aircraft following a B757, must be informed of the airplane manufacturer and/or model.

***EXAMPLE−***
*"Cessna Three Four Juliet, following a Boeing 757, 12 o'clock, six miles."*

*or*

*"Cessna Three Four Juliet, following a Seven fifty seven, 12 o'clock, six miles."*

***REFERENCE−***
*FAAO JO 7110.65, Para.2−4−21, Description of Aircraft Types.*

*NOTE−*
*Visual separation is not authorized when the lead aircraft is a super.*

***REFERENCE−***
*FAAO JO 7110.65, Para 7-2-1.*

**e.** Inform the tower of the aircraft's position prior to communications transfer at controlled airports. ARTS/STARS functions may be used provided a facility directive or LOA specifies control and communication transfer points.

**f.** In addition to the requirements of para 7−4−2, Vectors for Visual Approach, and subparas a, b, c, d, and e, ensure that the location of the destination airport is provided when the pilot is asked to report the destination airport in sight.

**g.** In those instances where airports are located in close proximity, also provide the location of the airport that may cause the confusion.

***EXAMPLE−***
*"Cessna Five Six November, Cleveland Burke Lakefront Airport is at 12 o'clock, 5 miles. Cleveland Hopkins Airport is at 1 o'clock 12 miles. Report Cleveland Hopkins in sight."*

***REFERENCE−***
*FAAO JO 7110.65, Para 7−4−4 Approaches to Multiple Runways.*

## 7−4−4. APPROACHES TO MULTIPLE RUNWAYS

**a.** All aircraft must be informed that approaches are being conducted to parallel, intersecting, or converging runways. This may be accomplished through use of the ATIS.

**b.** When conducting visual approaches to multiple runways ensure the following:

**1.** Do not permit the respective aircrafts' primary radar targets to touch unless visual separation is being applied.

**2.** When the aircraft flight paths intersect, ensure approved separation is maintained until visual separation is provided.

**c.** In addition to the requirements in para 7−2−1, Visual Separation, para 7−4−1, Visual Approach, para 7−4−2, Vectors for Visual Approach, and para 7−4−3, Clearance for Visual Approach, the following conditions apply to visual approaches being conducted simultaneously to parallel, intersecting, and converging runways, as appropriate:

**1.** Parallel runways separated by less than 2,500 feet. Unless approved separation is provided by ATC, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. However, do not permit a super or heavy aircraft to overtake another aircraft. Do not permit a B757 or other large aircraft to overtake a small aircraft.

**2.** Parallel runways separated by at least 2,500 feet, but less than 4,300 feet.

**(a)** Approved separation is provided until the aircraft are:

**(1)** Established on a heading or established on a direct course to a fix or cleared on an RNAV/ instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,

**(2)** Issued an approach clearance and one pilot has acknowledged receipt of a visual approach clearance, and,

**(3)** The other pilot has acknowledged receipt of a visual or instrument approach clearance.

*NOTE−*
**1.** *The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one*

*or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.*

**2.** *Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.*

**3.** *Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.*

***REFERENCE–***
*FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."*

**(b)** Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subpara (a) are met.

**(c)** Provided aircraft flight paths do not intersect, and when the provisions of subparas (a) and (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent final approach course.

**3.** Parallel runways separated by 4,300 feet or more.

**(a)** When aircraft flight paths do not intersect, visual approaches may be conducted simultaneously, provided approved separation is maintained until one of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

**(b)** Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subpara (a) are met.

**(c)** Provided the aircraft flight paths do not intersect, when the provisions of subparas (a) and (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent final approach course.

**(d)** Each aircraft must either be assigned a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees.

***NOTE–***
**1.** *The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.*

**2.** *Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.*

**3.** *Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.*

***REFERENCE–***
*FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."*

**4.** Intersecting and converging runways. Visual approaches may be conducted simultaneously with visual or instrument approaches to other runways, provided:

**(a)** Approved separation is maintained until the aircraft conducting the visual approach has been issued, and the pilot has acknowledged receipt of, the visual approach clearance.

**(b)** When aircraft flight paths intersect, approved separation must be maintained until visual separation is provided.

***NOTE–***
*Although simultaneous approaches may be conducted to intersecting runways, staggered approaches may be necessary to meet the airport separation requirements specified in Para 3–10–4 Intersecting Runway/Intersecting Flight Path Separation.*

***REFERENCE–***
*FAAO 7110.79, Charted Visual Flight Procedures.*
*FAAO JO 7110.65, Para 7–4–5 Charted Visual Flight Procedures (CVFP). USA/USN Not Applicable.*
*FAAO JO 7110.65, Para 7–7–3 Separation.*

### 7–4–5. CHARTED VISUAL FLIGHT PROCEDURES (CVFP). USA/USN NOT APPLICABLE

Clear an aircraft for a CVFP only when the following conditions are met:

**a.** There is an operating control tower.

**b.** The published name of the CVFP and the landing runway are specified in the approach clearance, 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 more, unless higher minimums are published for the particular CVFP.

**c.** When using parallel or intersecting/converging runways, the criteria specified in Para 7−4−4, Approaches to Multiple Runways, are applied.

**d.** An aircraft not following another aircraft on the approach reports sighting a charted visual landmark, or reports sighting a preceding aircraft landing on the same runway and has been instructed to follow that aircraft.

***PHRASEOLOGY−***
*(Ident) CLEARED (name of CVFP) APPROACH.*

## 7−4−6. CONTACT APPROACH

Clear an aircraft for a contact approach only if the following conditions are met:

**a.** The pilot has requested it.

***NOTE−***
*When executing a contact approach, the pilot is responsible for maintaining the required flight visibility, cloud clearance, and terrain/obstruction clearance. Unless otherwise restricted, the pilot may find it necessary to descend, climb, and/or fly a circuitous route to the airport to maintain cloud clearance and/or terrain/obstruction clearance. It is not in any way intended that controllers will initiate or suggest a contact approach to a pilot.*

**b.** The reported ground visibility is at least 1 statute mile.

**c.** A standard or special instrument approach procedure has been published and is functioning for the airport of intended landing.

**d.** Approved separation is applied between aircraft so cleared and other IFR or SVFR aircraft. When applying vertical separation, do not assign a fixed altitude but clear the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below the minimum safe altitude prescribed in 14 CFR Section 91.119.

***NOTE−***
*14 CFR Section 91.119 specifies the minimum safe altitude to be flown:*
*(a) Anywhere.*
*(b) Over congested areas.*
*(c) Other than congested areas. To provide for an emergency landing in the event of power failure and without undue hazard to persons or property on the surface.*
*(d) Helicopters. May be operated at less than the minimums prescribed in paras (b) and (c) above if the operation is conducted without hazard to persons or property on the surface.*

**e.** An alternative clearance is issued when weather conditions are such that a contact approach may be impracticable.

***PHRASEOLOGY−***
*CLEARED CONTACT APPROACH,*

*And if required,*
*AT OR BELOW (altitude) (routing).*

*IF NOT POSSIBLE, (alternative procedures), AND ADVISE.*

# 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 subpara a1 above.

**b.** Turbojet operations *(subsonic flight)*:

**1.** Apply the prescribed minima in accordance with para 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 shall be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that degrade required separation during the ITP.

*NOTE−*
*Same identical tracks are where the angular difference is zero degrees.*

**5.** No speed or route change clearance shall 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 shall be 2000 ft or less;

**7.** No instruction to amend speed, altitude or route shall 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 shall be Mach 0.06; and

**9.** The ITP aircraft shall 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 ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, Ocean21).

*FIG 8−7−1*
**ADS−C Criteria**

| Minima | RNP | Maximum ADS-C Periodic Reporting Interval |
|---|---|---|
| 50 NM | 10 | 27 minutes |
| 50 NM | 4 | 32 minutes |
| 30 NM | 4 | 10 minutes |

**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−*
*Ocean21 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.

## 8−7−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *30 NM* to RNP-4 approved aircraft operating within airspace designated for RNP-4 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., Ocean21).

**b.** *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft which:

**1.** Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR; or

**2.** Operate in the New York Oceanic CTA/FIR outside of WATRS.

*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 meet the MNPS and which:

**(a)** Operate within MNPS airspace; or

**(b)** Are in transit to or from MNPS airspace; or

**(c)** Operate for part of their flight within, above, or below MNPS airspace.

***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 subparas 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.*

## 8−7−5. PROCEDURES FOR WEATHER DEVIATIONS IN NORTH ATLANTIC (NAT) AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, 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 separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish the 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), ADVISE 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 Regional Supplementary Procedures, ICAO Doc. 7030.*

# 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 para 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 shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

*NOTE−*
*Same identical tracks are where the angular difference is zero degrees.*

5. No speed or route change clearance shall 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 shall be 2000 ft or less;

7. No instruction to amend speed, altitude or route shall 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 shall be Mach 0.06; and

9. The ITP aircraft shall 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 ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, Ocean21).

*FIG 8−8−1*
**ADS−C Criteria**

| Minima | RNP | Maximum ADS-C Periodic Reporting Interval |
|---|---|---|
| 50 NM | 10 | 27 minutes |
| 50 NM | 4 | 32 minutes |
| 30 NM | 4 | 10 minutes |

**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−*
*Ocean21 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.

## 8−8−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *30 NM* to RNP-4 approved aircraft operating within airspace designated for RNP-4 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., Ocean21).

**b.** *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft which:

**1.** Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR; or

**2.** Operate in the New York Oceanic CTA/FIR outside of WATRS; or

**3.** Operate in the Houston Oceanic CTA/FIR or the Gulf of Mexico 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 subpara 1 above.

**3.** Aircraft which meet the MNPS and which:

**(a)** Operate within MNPS airspace; or

**(b)** Are in transit to or from MNPS airspace; or

**(c)** Operate for part of their flight within, above, or below MNPS airspace.

***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 subparas 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, except when aircraft operate within airspace where composite separation and procedures are authorized, apply the minima specified in para 8−9−5, Composite Separation Minima.

## 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 para 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 shall be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that degrade required separation during the ITP.

***NOTE−***
*Same identical tracks are where the angular difference is zero degrees.*

**5.** No speed or route change clearance shall 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 shall be 2000 ft or less;

**7.** No instruction to amend speed, altitude or route shall 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 shall be Mach 0.06; and

**9.** The ITP aircraft shall 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 ADS−C periodic reports are maintained and monitored by an automated flight data processor (e.g., Ocean21);

*TBL 8−9−1*
**ADS−C Criteria**

| Minima | RNP | Maximum ADS−C Periodic Reporting Interval |
|---|---|---|
| 50 NM | 10 | 27 minutes |
| 50 NM | 4 | 32 minutes |
| 30 NM | 4 | 14 minutes |

**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−***
*Ocean21 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.

**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.*

**e.** 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−***
*FAAO JO 7110.65, Para 2−1−21, Traffic Advisories.*

## 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 10 (RNP−10) separation and procedures are authorized, apply *50 NM* to RNP−10 approved aircraft.

**b.** Apply *30 NM* to RNP−4 approved aircraft operating within airspace designated for RNP−4 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., Ocean21).

**c.** When aircraft operate within airspace where composite separation and procedures are authorized, apply the minimum specified in para 8−9−5, Composite Separation Minima.

**d.** Apply *100 NM* to aircraft not covered by subparas a, b or c.

### 8−9−5. COMPOSITE SEPARATION MINIMA

Provide composite separation within the Central East Pacific (CEP) and North Pacific (NOPAC) composite route systems and where designated by facility directive in the Pacific Organized Track System (PACOTS) at and above FL 290 as follows:

**a.** *1,000 feet* vertical separation; and

**b.** *50 NM* lateral separation.

### 8−9−6. COMPOSITE SEPARATION ALTITUDE ASSIGNMENT

**a.** Aircraft operating at or above FL 300 in a composite route system may be cleared at even flight levels. Additionally, aircraft may be cleared at even flight levels while joining, crossing, or leaving a composite route system provided such aircraft leaving the system are cleared to an appropriate odd cardinal flight level when noncomposite vertical or lateral separation is achieved.

**b.** Aircraft (operating at or above FL 300) leaving a composite route system at an even cardinal flight level do not have to be assigned an odd cardinal flight level provided:

**1.** The aircraft is being provided radar service; and

**2.** The aircraft will be cleared for descent and approach to an airport within the facility's domestic FIR; and

**3.** There is an operational advantage.

**c.** Aircraft operating on unidirectional routes or traffic flows may be assigned altitudes other than the appropriate altitude for direction of flight provided that 2,000 feet vertical separation is maintained between aircraft operating on the same route.

### 8−9−7. COMPOSITE SEPARATION APPLICATION

Provide composite separation in the CEP and the North Pacific (NOPAC) composite route systems and where designated by facility directive in the Pacific Organized Track System (PACOTS) as follows:

**a.** Clear an aircraft to join an outer route of the composite route system at other than the normal entry point provided:

**1.** Longitudinal or noncomposite vertical separation exists between that aircraft and any other aircraft on that route; and

**2.** Composite separation exists between that aircraft and any other aircraft on the next adjacent route.

**b.** Clear an aircraft to leave an outer route of the composite route system at other than the normal exit point provided its course diverges so that lateral spacing from the route system increases until noncomposite separation exists between that aircraft and any other aircraft in the composite route system.

**c.** Clear an aircraft to change from one route to an adjacent route within the composite route system provided:

**1.** Longitudinal or noncomposite vertical separation is maintained between that aircraft and any other aircraft on the route being vacated until that aircraft is established on the route to which it is proceeding; and

**2.** Longitudinal or noncomposite vertical separation exists between that aircraft and any other aircraft on the route to which that aircraft is proceeding; and

**3.** Composite separation exists between that aircraft and any other aircraft on the next adjacent route.

**d.** Clear an aircraft to cross the composite route system provided longitudinal or noncomposite vertical or lateral separation exists between that aircraft and any other aircraft in the composite route system.

**e.** Clear aircraft to transition to or from the composite route system from an Oceanic Transition Route (OTR) provided:

**1.** The OTR is charted on aeronautical charts; and

**2.** Composite separation is maintained between that aircraft and any other aircraft within the composite route system; and

***NOTE–***
*An aircraft is within the confines of a composite route system when the aircraft joins or crosses the outer route of the composite route system or passes a composite route entry point.*

**3.** Composite separation is maintained between that aircraft and any other aircraft on adjacent OTRs.

**f.** Clear an aircraft to change altitude on a route if noncomposite separation exists between that aircraft and others operating on that route regardless of other aircraft operating on adjacent routes in the system. Pilot's discretion climbs and descents are not authorized when applying composite separation.

***NOTE–***
*Although composite separation is not applied between aircraft on different tracks at FL 280 and FL 290, this paragraph applies to climbs and descents between FL 280 and altitudes within the composite altitude stratum (FL 300 and above).*

## 8–9–8. 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 known areas of weather, 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 separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish approved 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 AT clearance is not available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc 7030 and Chart Supplements.*

# 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 shall be limited to less than 45 degrees; or

**(b)** same tracks with no turns permitted that degrade required separation during the ITP.

*NOTE–*
*Same identical tracks are where the angular difference is zero degrees.*

**5.** No speed or route change clearance shall 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 shall be 2000 ft or less;

**7.** No instruction to amend speed, altitude or route shall 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 shall be Mach 0.06; and

**9.** The ITP aircraft shall 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 ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, Ocean21).

*TBL 8−10−1*
**ADS−C Criteria**

| Minima | RNP | Maximum ADS−C Periodic Reporting Interval |
|---|---|---|
| 50 NM | 10 | 27 minutes |
| 50 NM | 4 | 32 minutes |
| 30 NM | 4 | 10 minutes |

**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)** (a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

**(b)** (b) The aircraft have passed each other by the applicable separation minimum.

*NOTE−*
*Ocean21 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.

## 8−10−4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

**a.** *50 NM* to RNP−10 approved aircraft within areas where RNP−10 separation and procedures are authorized,

**b.** *30 NM* to RNP−4 approved aircraft 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 (for example, Ocean21).

*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.

# Chapter 9. Special Flights

## Section 1. General

### 9-1-1. GENERAL

Provide aircraft engaged in the flight inspection of NAVAIDs with maximum assistance. Unless otherwise agreed to, maintain direct contact with the pilot and exchange information regarding known traffic in the area and his/her intentions.

*NOTE-*
**1.** *Many flight inspections are accomplished using automatic recording equipment, and an uninterrupted flight is necessary for successful completion of the mission. The workload for the limited number of aircraft engaged in these activities requires strict adherence to a schedule.*

**2.** *Flight inspection operations which require special participation of ground personnel, specific communications, or radar operation capabilities are considered to require special handling. These flights are coordinated with appropriate facilities before departure.*

***REFERENCE-***
*FAAO 8200.1, United States Standard Flight Inspection Manual.*
*FAAO 8240.41, Flight Inspection/Air Traffic On-Site Coordination Requirements.*

### 9-1-2. SPECIAL HANDLING

**a.** Clear the aircraft according to pilot request as soon as practicable. Do not ask the pilot to deviate from his/her planned action except to preclude an emergency situation.

***REFERENCE-***
*FAAO 8240.41, Flight Inspection/Air Traffic On-Site Coordination Requirements, Appendix 1, describes certain flight inspection maneuvers in detail.*

**b.** Issue radar advisories to the flight inspection aircraft where adequate coverage exists and to the extent permitted by workload.

**c.** Suggest flight path adjustments, as required, for any aircraft which will enter or penetrate an area in which a flight inspection function is being performed.

**d.** Provide special handling, as required, to FAA aircraft conducting flight inspections using the call sign "Flight Check." The call sign "Flight Check (Nr) recorded" indicates automated flight inspections are in progress in terminal areas.

*NOTE-*
**1.** *FAA flight inspection aircraft will file flight plans using the call sign "FLIGHT CHECK" during flight inspections or when inbound to conduct flight inspections. Flight plan remarks may indicate type NAVAID inspection to be accomplished; e.g. "FC OKC P."*

**2.** *Authorized non-FAA Service Providers conducting Flight Validation activities use the call sign "FLIGHT VAL." Although these activities are similar to Flight Inspection activities, no additional priority is granted with this call sign.*

### 9-1-3. FLIGHT CHECK AIRCRAFT

**a.** Provide special handling, as required, to expedite flight inspection of NAVAIDs and RADAR by flight check aircraft.

*NOTE-*
*Certain flight inspection maneuvers require operations in close proximity to the surface. These maneuvers can only be performed during daylight visual meteorological conditions. Preplanned automatic flight places the following limitations on the capability of the pilot to adhere to normal ATC clearances:*

**1.** *Route of flight - orbital from 6 nautical miles to a maximum of 40 nautical miles from the facility depending on the type of inspection. During commissioning flight checks all SIDs, STARs, airways, DME fixes, and approaches must be flown.*

**2.** *Altitude assignment - from 1,000 feet above the antenna site up to the minimum en route altitude (MEA).*

***REFERENCE-***
*FAAO JO 7110.65, Para 2-1-4 Operational Priority.*
*FAAO 8240.41, Flight Inspection/Air Traffic On-Site Coordination Requirements, Appendix 1, describes certain flight inspection maneuvers in detail.*

**b.** Avoid changes in the route or altitude from that filed by the pilot in the initial flight plan.

**c.** Do not impose air traffic control delays in the flight except to preclude emergency situations.

**d.** Do not change the previously assigned discrete beacon code of special radar accuracy flight check aircraft.

***REFERENCE-***
*FAAO JO 7210.3, Para 7-1-2, Special Radar Accuracy Checks.*
*FAAO JO 7210.3, Para 10-5-4, ASR Performance Checks.*

remain clear of the suspect aircraft by at least 100 yards if able.

***NOTE−***
*Passenger deplaning may be of paramount importance and must be considered before the aircraft is parked or moved away from service areas. The decision to use ramp facilities rests with the pilot, aircraft operator/airport manager.*

**c.** If you are unable to inform the suspect aircraft of a bomb threat or if you lose contact with the aircraft, advise your supervisor and relay pertinent details to other sectors or facilities as deemed necessary.

**d.** When a pilot reports the discovery of a bomb or suspected bomb on an aircraft which is airborne or on the ground, determine the pilot's intentions and comply with his/her requests in so far as possible. Take all of the actions discussed in the preceding paragraphs which may be appropriate under the existing circumstances.

**e.** The handling of aircraft when a hijacker has or is suspected of having a bomb requires special considerations. Be responsive to the pilot's requests and notify supervisory personnel. Apply hijacking procedures and offer assistance to the pilot according to the preceding paragraphs, if needed.

## 10−2−12. EXPLOSIVE DETECTION K−9 TEAMS

Take the following actions should you receive an aircraft request for the location of the nearest explosive detection K−9 team.

***REFERENCE−***
*FAAO JO 7210.3, Para 2−1−11, Explosives Detection K−9 Teams.*

**a.** Obtain the aircraft identification and position and advise your supervisor of the pilot request.

**b.** When you receive the nearest location of the explosive detection K−9 team, relay the information to the pilot.

**c.** If the aircraft wishes to divert to the airport location provided, obtain an estimated arrival time from the pilot and advise your supervisor.

## 10−2−13. MANPADS ALERT

When a threat or attack from Man−Portable Air Defense Systems (MANPADS) is determined to be real, notify and advise aircraft as follows:

**a.** Do not withhold landing clearance. To the extent possible, issue information on MANPADS threats, confirmed attacks, or post−event activities in time for it to be useful to the pilot. The pilot or parent company will determine the pilot's actions.

**b.** MANPADS information will be disseminated via the ATIS and/or controller−to−pilot transmissions.

**c.** Disseminate via controller−to−pilot transmission until the appropriate MANPADS information is broadcast via the ATIS and pilots indicate they have received the appropriate ATIS code. MANPADS information will include nature and location of threat or incident, whether reported or observed and by whom, time (if known), and when transmitting to an individual aircraft, a request for pilot's intentions.

***PHRASEOLOGY−***
*ATTENTION (aircraft identification), MANPADS ALERT. EXERCISE EXTREME CAUTION. MANPADS THREAT/ATTACK/POST−EVENT ACTIVITY OBSERVED/REPORTED BY (reporting agency) (location) AT (time, if known). (When transmitting to an individual aircraft) SAY INTENTIONS.*

***EXAMPLE−***
*"Attention Eastern Four Seventeen, MANPADS alert. Exercise extreme caution. MANPADS threat reported by TSA, LaGuardia vicinity. Say intentions."*

*"Attention all aircraft, MANPADS alert. Exercise extreme caution. MANPADS post−event activity observed by tower south of airport at two−one−zero−zero Zulu."*

**d.** Report MANPADS threat/attack/post–event activity via the ATIS and/or controller–to–pilot transmissions until notified otherwise by the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC).

***REFERENCE−***
*FAAO JO 7110.65, Para 2−9−3, Content.*
*FAAO JO 7210.3, Para 2−1−9, Handling MANPADS Incidents.*
*FAAO JO 7610.4, para 16-1-3, Responsibilities.*

## 10−2−14. UNAUTHORIZED LASER ILLUMINATION OF AIRCRAFT

**a.** When a laser event is reported to an air traffic facility, broadcast on all appropriate frequencies a general caution warning every five minutes for 20 minutes following the last report.

***PHRASEOLOGY−***
*UNAUTHORIZED LASER ILLUMINATION EVENT, (location), (altitude).*

**b.** Terminal facilities must include reported unauthorized laser illumination events on the ATIS broadcast for one hour following the last report. Include the time, location, altitude, color, and direction of the laser as reported by the pilot.

*NOTE−*
*All personnel can expect aircrews to regard lasers as an inflight emergency and may take evasive action to avoid laser illumination. Additionally, other aircraft may request clearance to avoid the area.*

***REFERENCE−***
*FAAO JO 7110.65, Para 2−9−3 Content.*
*FAAO JO 7210.3, Para 2−1−27, Reporting Unauthorized Laser Illumination of Aircraft.*

## 10−2−15. EMERGENCY AIRPORT RECOMMENDATION

**a.** Consider the following factors when recommending an emergency airport:

**1.** Remaining fuel in relation to airport distances.

**2.** Weather conditions.

*NOTE−*
*Depending on the nature of the emergency, certain weather phenomena may deserve weighted consideration when recommending an airport; e.g., a pilot may elect to fly farther to land at an airport with VFR instead of IFR conditions.*

**3.** Airport conditions.

**4.** NAVAID status.

**5.** Aircraft type.

**6.** Pilot's qualifications.

**7.** Vectoring or homing capability to the emergency airport.

**b.** Consideration to the provisions of subpara a and para 10−2−16, Guidance to Emergency Airport, must be used in conjunction with the information derived from any automated emergency airport information source.

## 10−2−16. GUIDANCE TO EMERGENCY AIRPORT

**a.** When necessary, use any of the following for guidance to the airport:

**1.** Radar.

**2.** Following another aircraft.

**3.** NAVAIDs.

**4.** Pilotage by landmarks.

**5.** Compass headings.

**b.** Consideration to the provisions of para 10−2−15, Emergency Airport Recommendation, must be used in conjunction with the information derived from any automated emergency airport information source.

## 10−2−17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

**a.** The EOVM is intended to facilitate advisory service to an aircraft in an emergency situation wherein an appropriate terrain/obstacle clearance minimum altitude cannot be maintained. It must only be used and the service provided under the following conditions:

**1.** The pilot has declared an emergency, or

**2.** The controller has determined that an emergency condition exists or is imminent because of the pilot's inability to maintain an appropriate terrain/obstacle clearance minimum altitude.

*NOTE−*
*Appropriate terrain/obstacle clearance minimum altitudes may be defined as Minimum IFR Altitude (MIA), Minimum En Route Altitude (MEA), Minimum Obstruction Clearance Altitude (MOCA), or Minimum Vectoring Altitude (MVA).*

**b.** When providing emergency vectoring service, the controller must advise the pilot that any headings issued are emergency advisories intended only to direct the aircraft toward and over an area of lower terrain/obstacle elevation.

*NOTE−*
*Altitudes and obstructions depicted on the EOVM are the actual altitudes and locations of the obstacle/terrain and contain no lateral or vertical buffers for obstruction clearance.*

***REFERENCE−***
*FAAO JO 7210.3, Para 3−9−4, Emergency Obstruction Video Map (EOVM).*

## 10−2−18. VOLCANIC ASH

**a.** If a volcanic ash cloud is known or forecast to be present:

**1.** Relay all information available to pilots to ensure that they are aware of the ash cloud's position and altitude(s).

**2.** Suggest appropriate reroutes to avoid the area of known or forecast ash clouds.

*NOTE−*
*Volcanic ash clouds are not normally detected by airborne or air traffic radar systems.*

**b.** If advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

**1.** Consider the aircraft to be in an emergency situation.

**2.** Do not initiate any climb clearances to turbine−powered aircraft until the aircraft has exited the ash cloud.

**3.** Do not attempt to provide escape vectors without pilot concurrence.

*NOTE−*
**1.** *The recommended escape maneuver is to reverse course and begin a descent (if terrain permits). However, it is the pilot's responsibility to determine the safest escape route from the ash cloud.*

**2.** *Controllers should be aware of the possibility of complete loss of power to any turbine−powered aircraft that encounters an ash cloud.*

*REFERENCE−*
*FAAO JO 7110.65, Para 10−2−4 Altitude Change for Improved Reception.*
*AIM, Para 7−5−9, Flight Operations in Volcanic Ash.*

## 10−2−19. REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT

**a.** If an air traffic controller receives a report of the death of person, an illness, and/or other public health risk obtain the following information and notify the operations manager in charge (OMIC)/front line manager (FLM)/controller-in-charge (CIC) as soon as possible.

**1.** Call sign.

**2.** Number of suspected cases of illness on board.

**3.** Nature of the illnesses or other public health risk, if known.

**4.** Number of persons on board.

**5.** Number of deaths, if applicable.

**6.** Pilot's intent (for example, continue to destination or divert).

**7.** Any request for assistance (for example, needing emergency medical services to meet the aircraft at arrival).

**b.** The OMIC/FLM/CIC must relay the information to the DEN as soon as possible.

*NOTE−*
**1.** *If the ATC facility is not actively monitoring the DEN or does not have a dedicated line to the DEN, they must call into the DEN directly via (202) 493-4170.*

**2.** *Except in extraordinary circumstances, such as a situation requiring ATC intervention, follow-on coordination regarding the incident will not involve ATC frequencies.*

**3.** *The initial report to a U.S. ATC facility may be passed from a prior ATC facility along the route of flight.*

*REFERENCE−*
*FAAO JO 7210.3, Para 2-1-29, REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT*

# Chapter 11. Traffic Management Procedures

## Section 1. General

### 11−1−1. DUTY RESPONSIBILITY

**a.** The mission of the traffic management system is to balance air traffic demand with system capacity to ensure the maximum efficient utilization of the NAS.

**b.** TBFM must be used to the maximum extent feasible in preference to miles-in-trail initiatives.

*NOTE−*
*The benefits of TBFM are best realized through the coordinated effort of all facilities supporting Performance Based Navigation procedures or Traffic Management Initiatives (TMIs).*

**c.** It is recognized that the ATCS is integral in the execution of the traffic management mission.

*NOTE−*
*Complete details of traffic management initiatives and programs can be found in FAAO JO 7210.3, Facility Operation and Administration.*

### 11−1−2. DUTIES AND RESPONSIBILITIES

**a.** Supervisory Traffic Management Coordinator−in−Charge (STMCIC) must:

**1.** Ensure an operational briefing is conducted at least once during the day and evening shifts. Participants must include, at a minimum, the STMCIC, Front Line Manager-in-Charge (FLMIC)/Controller-in-Charge (CIC) and other interested personnel as designated by facility management. Discussions at the meeting should include meteorological conditions (present and forecasted), staffing, equipment status, runways in use, Airport Arrival Rate (AAR)/Metering Parameters and Traffic Management Initiatives (TMIs) (present and anticipated).

**2.** Assume responsibility for TMC duties when not staffed.

**3.** Ensure that TMIs are carried out by personnel providing traffic management services.

**4.** Where authorized, perform EDST data entries to keep the activation status of designated EDST Airspace Configuration Elements current.

**5.** Perform assigned actions in the event of an EDST outage or degradation, in accordance with the requirements of FAA Order 7210.3, Facility Operation and Administration, and as designated by facility directive.

**6.** Ensure changes to restrictions/metering are implemented in a timely manner.

**b.** FLM/CIC must:

**1.** Keep the TMU and affected sectors apprised of situations or circumstances that may cause congestion or delays.

**2.** Coordinate with the TMU and personnel providing air traffic services to develop appropriate TMIs for sectors and airports in their area of responsibility.

**3.** Continuously review TMIs affecting their area of responsibility and coordinate with TMU for extensions, revisions, or cancellations.

**4.** Ensure that TMIs are carried out by personnel providing air traffic services.

**5.** Where authorized, perform data entries to keep the activation status of designated EDST Airspace Configuration Elements current.

**6.** Perform assigned actions in the event of an EDST outage or degradation, in accordance with the requirements of FAA Order 7210.3, Facility Operation and Administration, and as designated by facility directive.

**7.** Ensure changes to <u>TMIs</u> are implemented in a timely manner.

**c.** Personnel providing air traffic services must:

**1.** Ensure that TMIs are enforced within their area of responsibility. TMIs do not have priority over maintaining:

**(a)** Separation of aircraft.

**(b)** Procedural integrity of the sector.

**2.** Keep the FLM/CIC and TMU apprised of situations or circumstances that may cause congestion or delays.

**3.** Continuously review TMIs affecting their area of responsibility and coordinate with FLM/CIC and TMU for extensions, revisions, or cancellations.

**4.** Where authorized, perform data entries to keep the activation status of designated EDST Airspace Configuration Elements current.

**5.** Perform assigned actions in the event of an EDST outage or degradation, in accordance with the requirements of FAA Order 7210.3, Facility Operation and Administration, and as designated by facility directive.

**d.** ARTCCs, unless otherwise coordinated, must:

**1.** Support TBFM operations and monitor TBFM equipment to improve situational awareness for a system approach to TMIs.

**2.** Monitor arrival flow for potential metering actions/changes and, if necessary, initiate coordination with all facilities to discuss the change to the metering plan.

**e.** TRACONs, unless otherwise coordinated, must:

**1.** Support TBFM operations and monitor TBFM equipment to improve situational awareness for a system approach to TMIs.

**2.** Monitor arrival flow for potential metering actions/changes and, if necessary, initiate coordination with all facilities to discuss the change to the metering plan.

**3.** Schedule internal departures in accordance with specific written procedures and agreements developed with overlying ARTCCs and adjacent facilities.

**f.** ATCTs, unless otherwise coordinated, must:

**1.** Monitor TBFM equipment to improve situational awareness for a system approach to TMIs.

**2.** Release aircraft, when CFR is in effect, so they are airborne within a window that extends from 2 minutes prior and ends 1 minute after the assigned time.

***NOTE−***
*Coordination may be verbal, electronic, or written.*

## 11−1−3. TIME BASED FLOW MANAGEMENT (TBFM)

During periods of metering, personnel providing air traffic services must:

**a.** Display TBFM schedule information on the main display monitor (MDM).

**b.** Comply with TBFM-generated metering times within +/- 1 minute.

**1.** If TBFM-generated metering time accuracy within +/- 1 minute cannot be used for specific aircraft due to significant jumps in the delay countdown timer (DCT), other TMIs may be used between those aircraft such as miles-in-trail (MIT) or minutes-in-trail (MINIT) to assist in delay absorption until stability resumes.

**2.** An exception to the requirement to comply within +/- 1 minute may be authorized for certain ARTCC sectors if explicitly defined in an appropriate facility directive.

**c.** When compliance is not possible, coordinate with FLM/CIC, personnel providing traffic management services, and adjacent facilities/sectors as appropriate.

***NOTE−***
*TBFM accuracy of generated metering times is predicated on several factors, including vectoring outside of TBFM route conformance boundaries (route recovery logic), certain trajectory ground speed calculations, and when TMU resequences a specific flight or flight list. Caution should be used in these situations to minimize impact on surrounding sector traffic and complexity levels, flight efficiencies, and user preferences.*

**2.** The miscellaneous abbreviations authorized in TBL 13−1−2.

**3.** The EDST equivalents for control information symbols authorized in TBL 13-1-3.

**4.** Plain language markings when it will aid in understanding information.

**5.** Locally approved abbreviations.

**d.** When the ACL or DL Free Text Area is used to enter control information, the Free Text Area must remain open and visible. When no longer relevant, the information entered into the Free Text Area must be updated or deleted.

**e.** Control information entered in the Free Text Area must be used for reference purposes only.

***NOTE−***
*Information entered into the Free Text Area does not pass on handoff and, if necessary, must be coordinated.*

*TBL 13−1−2*
**Miscellaneous Abbreviations**

| Abbreviation | Meaning |
|---|---|
| BC | Back course approach |
| CT | Contact approach |
| FA | Final approach |
| FMS | Flight management system approach |
| GPS | GPS approach |
| I | Initial approach |
| ILS | ILS approach |
| MA | Missed approach |
| NDB | Nondirectional radio beacon approach |
| OTP | VFR conditions−on−top |
| PA | Precision approach |
| PT | Procedure turn |
| RA | Resolution advisory (Pilot−reported TCAS event) |
| RH | Runway heading |
| RNAV | Area navigation approach |
| RP | Report immediately upon passing (fix/altitude) |
| RX | Report crossing |
| SA | Surveillance approach |
| SI | Straight−in approach |
| TA | TACAN approach |
| TL | Turn left |
| TR | Turn right |
| VA | Visual approach |
| VR | VOR approach |

*TBL 13–1–3*

**EDST Equivalents for Control Information Symbols**

| Abbreviation | Meaning |
|---|---|
| T *dir* | Depart (direction if specified) |
| ↑ | Climb and maintain |
| ↓ | Descend and maintain |
| CR | Cruise |
| AT | At |
| X | Cross |
| M | Maintain |
| /*airway* | Join or intercept (airway, jet route, track, or course) |
| = | While in controlled airspace |
| WICA | While in control area |
| *dir* ECA | Enter control area |
| *dir* OOCA | Out of control area |
| *dir* ESA | Cleared to enter surface area. Indicated direction of flight by appropriate compass letter(s) |
| TSA *alt* | Through surface area and altitude indicated direction of flight by appropriate compass letter(s). Maintain special VFR conditions (altitude if appropriate) while in surface area |
| 250 K | Aircraft requested to adjust speed to 250 knots |
| –20 K | Aircraft requested to reduce speed 20 knots |
| +30 K | Aircraft requested to increase speed 30 knots |
| SVFR | Local Special VFR operations in the vicinity of (name) airport are authorized until (time). Maintain special VFR conditions (altitude if appropriate) |
| B4 | Before |
| AF | After or Past |
| / | Until |
| **instructions** | Alternate instructions |
| REST | Restriction |
| AOB | At or Below |
| AOA | At or Above |
| – | From–to (route, time, etc.) |
| (Alt)B(Alt) | Indicates a block altitude assignment. Altitudes are inclusive, and the first altitude must be lower than the second (Example 310B370) |
| V *time* | Clearance void if aircraft not off ground by *time* |
| CL | Pilot canceled flight plan |
| +*info*+ | Information or revised information forwarded |
| ***alt*** | Other than assigned altitude reported Example: **50** |
| ARC *mi. dir.* | DME arc of VORTAC or TACAN |
| C *freq.* | Contact (facility) or (freq.), (time, fix, or altitude if appropriate). Insert frequency only when it is other than standard |
| R | Radar contact |
| R *alt* | Requested altitude |
| R/ | Radar service terminated |
| RX | Radar Contact Lost |
| RV | Radar vector |
| RVX | Pilot resumed own navigation |
| HO | Handoff completed |
| E | Emergency |
| W | Warning |
| P | Point out initiated. Indicate the appropriate facility, sector, or position. |
| FUEL | Minimum fuel |
| EFC *time* | Expect further clearance at (time) |
| – *fix* | Direct to fix |
| FRC | Full route clearance |
| IAF | Initial approach fix |
| NORDO | No Radio |
| PT | Procedure turn |
| RLS | Release |
| REQ | Request |
| SI | Straight in |

## 13−1−9. ACKNOWLEDGEMENT OF AUTOMATED NOTIFICATION

**a.** The EDST Inappropriate Altitude for Direction of Flight (IAFDOF) feature must be used in the automatic mode (i.e., IAFDOF Manual must remain deselected) unless otherwise authorized in a facility directive.

**b.** Completion of any required coordination for IAFDOF must be acknowledged on the ACL by removing the IAFDOF coding.

**c.** Completion of appropriate coordination for an Unsuccessful Transmission Message (UTM) must be acknowledged on the ACL by removing the UTM coding.

**d.** Issuance of the Expect Departure Clearance Time (EDCT) to the pilot or other control facility must be acknowledged on the DL by removing the EDCT coding.

**e.** IAFDOF, UTM, or EDCT coding must be acknowledged only after the appropriate action has been completed.

**f.** The first sector which displays Embedded Route Text (ERT) coding must issue and send/acknowledge the route prior to initiating a hand-off unless verbally coordinated or as specified in appropriate facility directives. Do not send/acknowledge ERT coding unless the sector has track control for the flight or it has been otherwise coordinated.

**g.** Route Action Notifications (RAN) such as ATC preferred routes or route processing errors must be amended at the first control position that displays the RAN unless verbally coordinated or as specified in appropriate facility directives. Do not remove RAN coding unless the sector has track control or it has been otherwise coordinated.

## 13−1−10. CURRENCY OF TRAJECTORY INFORMATION

**a.** The sector team shall perform automation entries in a timely manner.

***NOTE−***
**1.** *Conflict probe accuracy requires timely updates of data used to model each flight's trajectory. If this data is not current, the aircraft entries and notification of probe results for surrounding sectors and facilities, as well as the subject sector, may be misleading.*

**2.** *Data used to model an individual aircraft's trajectory includes route of flight, assigned and interim altitudes, application/removal of an adapted restriction for that flight, and aircraft type.*

**b.** An exception to the requirement to enter or update interim altitudes may be authorized for certain ARTCC sectors if explicitly defined in an appropriate facility directive.

***NOTE−***
*Conflict probe accuracy in assigning alert notification is dependent upon entry/update of a flight's interim altitude.*

## 13−1−11. DELAY REPORTING

**a.** Adhere to all applicable delay reporting directives.

**b.** Delay information shall be recorded. Delay information may be automatically recorded via use of the EDST Hold Annotations Menu, ERAM Hold Data Menu, ERAM Hold View, or manually on flight progress strips or facility-approved worksheets, in accordance with the facility-defined standard.

**c.** When using the Hold Annotation Menu to automatically record delay information, the hold annotations shall be deleted when the aircraft is cleared from holding.

***NOTE−***
*When using EDST hold annotations, delay information cannot be accurately recorded unless the annotations are deleted when the aircraft is cleared from holding. When using the ERAM Hold Data Menu or Hold View, delays are automatically recorded when the aircraft is cleared out of hold.*

## 13−1−12. OVERDUE AIRCRAFT

Upon receipt of the overdue aircraft notification take appropriate actions set forth in Chapter 10, Section 3, Overdue aircraft.

***NOTE−***
*ESDT overdue aircraft notification is based on radar track data. Updating an aircraft's route of fight will remove the overdue aircraft notification.*

### 13−1−13. USE OF GRAPHICS PLAN DISPLAY (GPD)

**a.** Graphic depictions of flight trajectories may be used only to aid in situational awareness and strategic planning.

**b.** Do not use trajectory−based positions as a substitute for radar track position.

**c.** Do not use trajectory−based altitude in lieu of Mode C for altitude confirmation.

**d.** Do not use the GPD for radar identification, position information, transfer of radar identification, radar separation, correlation, or pointouts.

### 13−1−14. FORECAST WINDS

In the event that current forecast wind data are not available, continue use of conflict probe and trial planning with appropriate recognition that alert and trajectory data may be affected.

### 13−1−15. INTERFACILITY CONNECTIVITY

In the event of a loss of connectivity to an adjacent ERAM facility, continue use of EDST with appropriate recognition that alert data may be affected.

### 13−1−16. SURVEILLANCE AND FLIGHT DATA OUTAGES

In the event of a surveillance or flight data outage, electronic flight data may be used to support situational awareness while the facility transitions to alternate automation capabilities or non radar procedures.

### 13−1−17. AIRSPACE CONFIGURATION ELEMENTS

**a.** Airspace Configuration Elements are:

**1.** Special Activity Airspace (SAA).

**2.** Airport Stream Filters (ASF).

**3.** Adapted restrictions.

**b.** Where assigned as a sector responsibility by facility directive, the sector team shall update Airspace Configuration Elements to reflect current status.

***NOTE−***
*Unless otherwise covered in an LOA or facility directive, activating or scheduling the SAA in the Airspace Status View does NOT constitute coordination for activation of airspace.*

**c.** For Airspace Configuration Elements designated as a sector responsibility, notify the operational supervisor when the status of an Airspace Configuration Element has been modified.

# Appendix A. Standard Operating Practice (SOP) for the Transfer of Position Responsibility

## 1. PURPOSE

This appendix prescribes the method and step−by−step process for conducting a position relief briefing and transferring position responsibility from one specialist to another.

## 2. DISCUSSION

**a.** In all operational facilities, the increase in traffic density and the need for the expeditious movement of traffic without compromising safety have emphasized the importance of the position relief process.

**b.** The contents, methods, and practices used for position relief and briefings vary among personnel, and pertinent information is often forgotten or incompletely covered. Major problems occur whenever there is a heavy reliance upon memory, unsupported by routines or systematic reminders. This SOP addresses the complete task of transferring position responsibility and the associated relief briefing.

**c.** Position relief unavoidably provides workload for specialists at the time of relief. The intent of this SOP is to make the transfer of position responsibility take place smoothly and to ensure a complete transfer of information with a minimum amount of workload. The method takes advantage of a self−briefing concept in which the relieving specialist obtains needed status information by reading from the Status Information Area/s to begin the relief process. Up to the moment information related to the control of aircraft or vehicular movements requires verbal exchanges between specialists during the relief process. The method also specifies the moment when the transfer of position responsibility occurs.

**d.** In the final part of the relief process, the specialist being relieved monitors and reviews the position to ensure that nothing has been overlooked or incorrectly displayed and that the transfer of position responsibility occurred with a complete briefing.

## 3. TERMS

The following terms are important for a complete understanding of this SOP:

**a.** Status Information Area (SIA). Manual or automatic displays of the current status of position related equipment and operational conditions or procedures.

**b.** Written Notes. Manually recorded items of information kept at designated locations on the position of operation. They may be an element of the Status Information Area/s.

**c.** Checklist. An ordered listing of items to be covered during a position relief.

## 4. PRECAUTIONS

**a.** Specialists involved in the position relief process should not rush or be influenced to rush.

**b.** During position operation, each item of status information which is or may be an operational factor for the relieving specialist should be recorded as soon as it is operationally feasible so that it will not be forgotten or incorrectly recorded.

**c.** Extra care should be taken when more than one specialist relieves or is being relieved from a position at the same time; e.g., combining or decombining positions. Such simultaneous reliefs should be approached with caution.

## 5. RESPONSIBILITIES

**a.** The specialist being relieved must be responsible for ensuring that any pertinent status information of which he/she is aware is relayed to the relieving specialist and is either:

**1.** Accurately displayed in the Status Information Area/s for which he/she has responsibility, or

**2.** Relayed to the position having responsibility for accurately displaying the status information.

**b.** The relieving specialist must be responsible for ensuring that, prior to accepting responsibility for the position, any unresolved questions pertaining to the operation of the position are resolved.

**c.** The relieving specialist and the specialist being relieved must share equal responsibility for the completeness and accuracy of the position relief briefing.

**d.** The specialists engaged in a position relief must conduct the relief process at the position being relieved unless other procedures have been established and authorized by the facility air traffic manager.

***NOTE−***
*The "sharing" of this responsibility means that the specialist being relieved is obligated to provide a complete, accurate briefing and the relieving specialist is obligated to ensure that a briefing takes place and is to his/her total satisfaction.*

## 6. STEP−BY−STEP PROCESS

### a. PREVIEW THE POSITION

| Relieving Specialist | Specialist Being Relieved |
|---|---|
| **1.** Follow checklist and review the Status Information Area(s). | |
| ***NOTE−*** *This sub-step may be replaced by an authorized pre−position briefing provided an equivalent review of checklist items is accomplished.* | |
| **2.** Observe position equipment, operational situation, and the work environment. | |
| **3.** Listen to voice communications and observe other operational actions. | |
| **4.** Observe current and pending aircraft and vehicular traffic and correlate with flight and other movement information. | |
| **5.** Indicate to the specialist being relieved that the position has been previewed and that the verbal briefing may begin. | |
| ***NOTE−*** *Substeps 6a2, 3, and 4 may be conducted concurrently or in any order.* | |

**b. VERBAL BRIEFING**

| Relieving Specialist | Specialist Being Relieved |
|---|---|
| | **1.** Brief the relieving specialist on the abnormal status of items not listed on the Status Information Area(s) as well as on any items of special interest calling for verbal explanation or additional discussion. |
| | **2.** Brief on traffic if applicable. |
| | **3.** Brief communication status of all known aircraft. |
| **4.** Ask questions necessary to ensure a complete understanding of the operational situation. | |
| | **5.** Completely answer any questions asked. |

**c. ASSUMPTION OF POSITION RESPONSIBILITY**

| Relieving Specialist | Specialist Being Relieved |
|---|---|
| **1.** Make a statement or otherwise indicate to the specialist being relieved that position responsibility has been assumed. | |
| | **2.** Release the position to the relieving specialist and mentally note the time. |

**d. REVIEW THE POSITION**

| Relieving Specialist | Specialist Being Relieved |
|---|---|
| **1.** Check, verify, and update the information obtained in steps 6a and b. | |
| **2.** Check position equipment in accordance with existing directives. | |
| | **3.** Review checklist, Status Information Area/s, written notes, and other prescribed sources of information and advise the relieving specialist of known omissions, updates, or inaccuracies. |
| | **4.** Observe overall position operation to determine if assistance is needed. |
| | **5.** If assistance is needed, provide or summon it as appropriate. |
| | **6.** Advise the appropriate position regarding known Status Information Area(s) omissions, updates, or inaccuracies. |
| | **7.** Sign-on the relieving specialist with the time as noted in step 6c2. |
| | **8.** Sign off the position in accordance with existing directives or otherwise indicate that the relief process is complete. |

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# 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.** This Glossary will be revised, as necessary, to maintain a common understanding of the system.

**EXPLANATION OF CHANGES**

**d.** Terms Added:
ATC SURVEILLANCE SOURCE
CHART SUPPLEMENT U.S.
COLD TEMPERATURE COMPENSATION
GROUND BASED AUGMENTATION SYSTEM (GBAS)
GROUND BASED AUGMENTATION SYSTEM (GBAS) LANDING SYSTEM (GLS)
TIME BASED FLOW MANAGEMENT (TBFM)
WIDE AREA MULTILATERATION (WAM)

**e.** Terms Deleted:
AIRPORT/FACILITY DIRECTORY (A/FD)
EN ROUTE FLIGHT ADVISORY SERVICE
FLIGHT WATCH
OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS)
REMOTE AIRPORT ADVISORY (RAA)
SUPER HIGH FREQUENCY
TRAFFIC MANAGEMENT ADVISOR (TMA)

**f.** Terms Modified:
ADVISORY SERVICE
AVIATION WEATHER SERVICE
BRAKING ACTION
DISTANCE MEASURING EQUIPMENT
DME FIX
FLIGHT SERVICE STATION (FSS)
ICING
LOCAL AIRPORT ADVISORY (LAA)
RADAR CONTACT
RADAR CONTACT LOST

SCHEDULED TIME OF ARRIVAL (STA)
UNFROZEN

**g.** Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

# A

AAI–
(See ARRIVAL AIRCRAFT INTERVAL.)

AAR–
(See AIRPORT ARRIVAL RATE.)

ABBREVIATED IFR FLIGHT PLANS– An authorization by ATC requiring pilots to submit only that information needed for the purpose of ATC. It includes only a small portion of the usual IFR flight plan information. In certain instances, this may be only aircraft identification, location, and pilot request. Other information may be requested if needed by ATC for separation/control purposes. It is frequently used by aircraft which are airborne and desire an instrument approach or by aircraft which are on the ground and desire a climb to VFR-on-top.
(See VFR-ON-TOP.)
(Refer to AIM.)

***ABEAM–*** An aircraft is "abeam" a fix, point, or object when that fix, point, or object is approximately 90 degrees to the right or left of the aircraft track. Abeam indicates a general position rather than a precise point.

***ABORT–*** To terminate a preplanned aircraft maneuver; e.g., an aborted takeoff.

ACC [ICAO]–
(See ICAO term AREA CONTROL CENTER.)

ACCELERATE-STOP DISTANCE AVAILABLE– The runway plus stopway length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.

ACCELERATE-STOP DISTANCE AVAILABLE [ICAO]– The length of the take-off run available plus the length of the stopway if provided.

ACDO–
(See AIR CARRIER DISTRICT OFFICE.)

***ACKNOWLEDGE–*** Let me know that you have received and understood this message.

ACL–
(See AIRCRAFT LIST.)

ACLS–
(See AUTOMATIC CARRIER LANDING SYSTEM.)

ACLT–
(See ACTUAL CALCULATED LANDING TIME.)

ACROBATIC FLIGHT– An intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration not necessary for normal flight.
(See ICAO term ACROBATIC FLIGHT.)
(Refer to 14 CFR Part 91.)

ACROBATIC FLIGHT [ICAO]– Maneuvers intentionally performed by an aircraft involving an abrupt change in its attitude, an abnormal attitude, or an abnormal variation in speed.

ACTIVE RUNWAY–
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

ACTUAL CALCULATED LANDING TIME– ACLT is a flight's frozen calculated landing time. An actual time determined at freeze calculated landing time (FCLT) or meter list display interval (MLDI) for the adapted vertex for each arrival aircraft based upon runway configuration, airport acceptance rate, airport arrival delay period, and other metered arrival aircraft. This time is either the vertex time of arrival (VTA) of the aircraft or the tentative calculated landing time (TCLT)/ACLT of the previous aircraft plus the arrival aircraft interval (AAI), whichever is later. This time will not be updated in response to the aircraft's progress.

ACTUAL NAVIGATION PERFORMANCE (ANP)–
(See REQUIRED NAVIGATION PERFORMANCE.)

ADDITIONAL SERVICES– Advisory information provided by ATC which includes but is not limited to the following:

**a.** Traffic advisories.

**b.** Vectors, when requested by the pilot, to assist aircraft receiving traffic advisories to avoid observed traffic.

**c.** Altitude deviation information of 300 feet or more from an assigned altitude as observed on a verified (reading correctly) automatic altitude readout (Mode C).

**d.** Advisories that traffic is no longer a factor.

**e.** Weather and chaff information.

**f.** Weather assistance.

**g.** Bird activity information.

**h.** Holding pattern surveillance. Additional services are provided to the extent possible contingent only upon the controller's capability to fit them into the performance of higher priority duties and on the basis of limitations of the radar, volume of traffic, frequency congestion, and controller workload. The controller has complete discretion for determining if he/she is able to provide or continue to provide a service in a particular case. The controller's reason not to provide or continue to provide a service in a particular case is not subject to question by the pilot and need not be made known to him/her.

(See TRAFFIC ADVISORIES.)
(Refer to AIM.)

ADF−
(See AUTOMATIC DIRECTION FINDER.)

ADIZ−
(See AIR DEFENSE IDENTIFICATION ZONE.)

ADLY−
(See ARRIVAL DELAY.)

ADMINISTRATOR− The Federal Aviation Administrator or any person to whom he/she has delegated his/her authority in the matter concerned.

ADR−
(See AIRPORT DEPARTURE RATE.)

ADS [ICAO]−
(See ICAO term AUTOMATIC DEPENDENT SURVEILLANCE.)

ADS−B−
(See AUTOMATIC DEPENDENT SURVEILLANCE−BROADCAST.)

ADS−C−
(See AUTOMATIC DEPENDENT SURVEILLANCE−CONTRACT.)

***ADVISE INTENTIONS***− Tell me what you plan to do.

ADVISORY− Advice and information provided to assist pilots in the safe conduct of flight and aircraft movement.
(See ADVISORY SERVICE.)

ADVISORY FREQUENCY− The appropriate frequency to be used for Airport Advisory Service.
(See LOCAL AIRPORT ADVISORY.)
(See UNICOM.)
(Refer to ADVISORY CIRCULAR NO. 90-42.)
(Refer to AIM.)

ADVISORY SERVICE− Advice and information provided by a facility to assist pilots in the safe conduct of flight and aircraft movement.
(See ADDITIONAL SERVICES.)
(See LOCAL AIRPORT ADVISORY.)
(See RADAR ADVISORY.)
(See SAFETY ALERT.)
(See TRAFFIC ADVISORIES.)
(Refer to AIM.)

AERIAL REFUELING− A procedure used by the military to transfer fuel from one aircraft to another during flight.
(Refer to VFR/IFR Wall Planning Charts.)

AERODROME− A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure, and movement of aircraft.

AERODROME BEACON [ICAO]− Aeronautical beacon used to indicate the location of an aerodrome from the air.

AERODROME CONTROL SERVICE [ICAO]− Air traffic control service for aerodrome traffic.

AERODROME CONTROL TOWER [ICAO]− A unit established to provide air traffic control service to aerodrome traffic.

AERODROME ELEVATION [ICAO]− The elevation of the highest point of the landing area.

AERODROME TRAFFIC CIRCUIT [ICAO]− The specified path to be flown by aircraft operating in the vicinity of an aerodrome.

AERONAUTICAL BEACON− A visual NAVAID displaying flashes of white and/or colored light to indicate the location of an airport, a heliport, a landmark, a certain point of a Federal airway in mountainous terrain, or an obstruction.
(See AIRPORT ROTATING BEACON.)
(Refer to AIM.)

AERONAUTICAL CHART− A map used in air navigation containing all or part of the following: topographic features, hazards and obstructions, navigation aids, navigation routes, designated airspace, and airports. Commonly used aeronautical charts are:

**a.** Sectional Aeronautical Charts (1:500,000)− Designed for visual navigation of slow or medium speed aircraft. Topographic information on these charts features the portrayal of relief and a judicious selection of visual check points for VFR flight. Aeronautical information includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.

**b.** VFR Terminal Area Charts (1:250,000)− Depict Class B airspace which provides for the control or segregation of all the aircraft within Class B airspace. The chart depicts topographic information and aeronautical information which includes visual and radio aids to navigation, airports, controlled airspace, restricted areas, obstructions, and related data.

**c.** En Route Low Altitude Charts− Provide aeronautical information for en route instrument navigation (IFR) in the low altitude stratum. Information includes the portrayal of airways, limits of controlled airspace, position identification and frequencies of radio aids, selected airports, minimum en route and minimum obstruction clearance altitudes, airway distances, reporting points, restricted areas, and related data. Area charts, which are a part of this series, furnish terminal data at a larger scale in congested areas.

**d.** En Route High Altitude Charts− Provide aeronautical information for en route instrument navigation (IFR) in the high altitude stratum. Information includes the portrayal of jet routes, identification and frequencies of radio aids, selected airports, distances, time zones, special use airspace, and related information.

**e.** Instrument Approach Procedures (IAP) Charts− Portray the aeronautical data which is required to execute an instrument approach to an airport. These charts depict the procedures, including all related data, and the airport diagram. Each procedure is designated for use with a specific type of electronic navigation system including NDB, TACAN, VOR, ILS RNAV and GLS. These charts are identified by the type of navigational aid(s)/equipment required to provide final approach guidance.

**f.** Instrument Departure Procedure (DP) Charts− Designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. Each DP is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

**g.** Standard Terminal Arrival (STAR) Charts− Designed to expedite air traffic control arrival procedures and to facilitate transition between en route and instrument approach operations. Each STAR procedure is presented as a separate chart and may serve a single airport or more than one airport in a given geographical location.

**h.** Airport Taxi Charts− Designed to expedite the efficient and safe flow of ground traffic at an airport. These charts are identified by the official airport name; e.g., Ronald Reagan Washington National Airport.

(See ICAO term AERONAUTICAL CHART.)

AERONAUTICAL CHART [ICAO]− A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

AERONAUTICAL INFORMATION MANUAL (AIM)− A primary FAA publication whose purpose is to instruct airmen about operating in the National Airspace System of the U.S. It provides basic flight information, ATC Procedures and general instructional information concerning health, medical facts, factors affecting flight safety, accident and hazard reporting, and types of aeronautical charts and their use.

AERONAUTICAL INFORMATION PUBLICATION (AIP) [ICAO]− A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

(See CHART SUPPLEMENT U.S.)

***AFFIRMATIVE***− Yes.

AFIS−

(See AUTOMATIC FLIGHT INFORMATION SERVICE − ALASKA FSSs ONLY.)

AFP−

(See AIRSPACE FLOW PROGRAM.)

AIM−

(See AERONAUTICAL INFORMATION MANUAL.)

AIP [ICAO]−
(See ICAO term AERONAUTICAL INFORMATION PUBLICATION.)

AIR CARRIER DISTRICT OFFICE− An FAA field office serving an assigned geographical area, staffed with Flight Standards personnel serving the aviation industry and the general public on matters related to the certification and operation of scheduled air carriers and other large aircraft operations.

AIR DEFENSE EMERGENCY− A military emergency condition declared by a designated authority. This condition exists when an attack upon the continental U.S., Alaska, Canada, or U.S. installations in Greenland by hostile aircraft or missiles is considered probable, is imminent, or is taking place.
(Refer to AIM.)

AIR DEFENSE IDENTIFICATION ZONE (ADIZ)− The area of airspace over land or water, extending upward from the surface, within which the ready identification, the location, and the control of aircraft are required in the interest of national security.

**a.** Domestic Air Defense Identification Zone. An ADIZ within the United States along an international boundary of the United States.

**b.** Coastal Air Defense Identification Zone. An ADIZ over the coastal waters of the United States.

**c.** Distant Early Warning Identification Zone (DEWIZ). An ADIZ over the coastal waters of the State of Alaska.

**d.** Land−Based Air Defense Identification Zone. 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.

Note: ADIZ locations and operating and flight plan requirements for civil aircraft operations are specified in 14 CFR Part 99.

(Refer to AIM.)

AIR NAVIGATION FACILITY− Any facility used in, available for use in, or designed for use in, aid of air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio-directional finding, or for radio or other electrical communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and takeoff of aircraft.
(See NAVIGATIONAL AID.)

AIR ROUTE SURVEILLANCE RADAR− Air route traffic control center (ARTCC) radar used primarily to detect and display an aircraft's position while en route between terminal areas. The ARSR enables controllers to provide radar air traffic control service when aircraft are within the ARSR coverage. In some instances, ARSR may enable an ARTCC to provide terminal radar services similar to but usually more limited than those provided by a radar approach control.

AIR ROUTE TRAFFIC CONTROL CENTER− A facility established to provide air traffic control service to aircraft operating on IFR flight plans within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See EN ROUTE AIR TRAFFIC CONTROL SERVICES.)
(Refer to AIM.)

AIR TAXI− Used to describe a helicopter/VTOL aircraft movement conducted above the surface but normally not above 100 feet AGL. The aircraft may proceed either via hover taxi or flight at speeds more than 20 knots. The pilot is solely responsible for selecting a safe airspeed/altitude for the operation being conducted.
(See HOVER TAXI.)
(Refer to AIM.)

AIR TRAFFIC− Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.
(See ICAO term AIR TRAFFIC.)

AIR TRAFFIC [ICAO]− All aircraft in flight or operating on the maneuvering area of an aerodrome.

AIR TRAFFIC CLEARANCE− An authorization by air traffic control for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. The pilot-in-command of an aircraft may not deviate from the provisions of a visual flight rules (VFR) or instrument flight rules (IFR) air traffic clearance except in an emergency or unless an amended clearance has been obtained. Additionally, the pilot may request a different clearance from that which has been issued by air traffic control (ATC) if information available to the pilot makes another course of action more practicable or if aircraft equipment limitations or company procedures forbid compliance with the clearance issued. Pilots may also request clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable because of safety of flight. Controllers should, in such instances and to the extent of operational practicality and safety, honor the pilot's request. 14 CFR Part 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." THE PILOT IS RESPONSIBLE TO REQUEST AN AMENDED CLEARANCE if ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy.

(See ATC INSTRUCTIONS.)
(See ICAO term AIR TRAFFIC CONTROL CLEARANCE.)

AIR TRAFFIC CONTROL− A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

(See ICAO term AIR TRAFFIC CONTROL SERVICE.)

AIR TRAFFIC CONTROL CLEARANCE [ICAO]− Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Note 1: For convenience, the term air traffic control clearance is frequently abbreviated to clearance when used in appropriate contexts.

Note 2: The abbreviated term clearance may be prefixed by the words taxi, takeoff, departure, en route, approach or landing to indicate the particular portion of flight to which the air traffic control clearance relates.

AIR TRAFFIC CONTROL SERVICE−

(See AIR TRAFFIC CONTROL.)

AIR TRAFFIC CONTROL SERVICE [ICAO]− A service provided for the purpose of:

**a.** Preventing collisions:

**1.** Between aircraft; and

**2.** On the maneuvering area between aircraft and obstructions.

**b.** Expediting and maintaining an orderly flow of air traffic.

AIR TRAFFIC CONTROL SPECIALIST− A person authorized to provide air traffic control service.

(See AIR TRAFFIC CONTROL.)
(See FLIGHT SERVICE STATION.)
(See ICAO term CONTROLLER.)

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). Responsible for approving IFR flights at designated high density traffic airports (John F. Kennedy, LaGuardia, and Ronald Reagan Washington National) during specified hours.

(Refer to 14 CFR Part 93.)
(See CHART SUPPLEMENT U.S.)

**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.

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 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.

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.

(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 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 shall 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.

AIRMEN'S METEOROLOGICAL INFORMATION−

(See AIRMET.)

***AIRMET−*** In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or Convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.

(See AWW.)
(See CONVECTIVE SIGMET.)
(See CWA.)
(See SIGMET.)
(Refer to AIM.)

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 FAAO 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 STREAM FILTER (ASF)− An on/off filter that allows the conflict notification function to be inhibited for arrival streams into single or multiple airports to prevent nuisance alerts.

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 a X−band Surface Movement Radar and multilateration. Data from these two sources are fused and presented on a digital display.

**c.** ASDE−3X− an ASDE−X system that uses the ASDE−3 Surface Movement Radar.

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."

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.)

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− 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 distance measured from a point-in-space by systems using area navigation reference capabilities that are 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.

(See AUTOMATED RADAR TERMINAL SYSTEMS.)

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.)

(See AUTOMATED RADAR TERMINAL SYSTEMS.)

(Refer to AIM.)

ALTITUDE RESERVATION− 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.

(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 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 30NM arc centered on the IF bounded by a straight line extending through the IF perpendicular to the intermediate course.

**2.** LEFT BASE AREA− A 30NM arc centered on the right corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30NM 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 30NM arc centered on the left corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30NM 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 an ILS 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.

ARINC− An acronym for Aeronautical Radio, Inc., a corporation largely owned by a group of airlines. ARINC is licensed by the FCC as an aeronautical station and contracted by the FAA to provide communications support for air traffic control and meteorological services in portions of international airspace.

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 AIRCRAFT INTERVAL− An internally generated program in hundredths of minutes based upon the AAR. AAI is the desired optimum interval between successive arrival aircraft over the vertex.

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 SECTOR− An operational control sector containing one or more meter fixes.

ARRIVAL SECTOR ADVISORY LIST− An ordered list of data on arrivals displayed at the PVD/MDM of the sector which controls the meter fix.

ARRIVAL SEQUENCING PROGRAM− The automated program designed to assist in sequencing aircraft destined for the same airport.

ARRIVAL TIME− The time an aircraft touches down on arrival.

ARSR−
(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC−
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ARTS−
(See AUTOMATED RADAR TERMINAL SYSTEMS.)

ASDA−
(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]−
(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE−
(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASF−
(See AIRPORT STREAM FILTER.)

ASLAR−
(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASP−
(See ARRIVAL SEQUENCING PROGRAM.)

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.DME FIX
(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.

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.)

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.)

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 INFORMATION TRANSFER− 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 FAAO 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 RADAR TERMINAL SYSTEMS (ARTS)− A generic term for several tracking systems included in the Terminal Automation Systems (TAS). ARTS plus a suffix roman numeral denotes a major modification to that system.

**a.** ARTS IIIA. The Radar Tracking and Beacon Tracking Level (RT&BTL) of the modular, programmable automated radar terminal system. ARTS IIIA detects, tracks, and predicts primary as well as secondary radar-derived aircraft targets. This more sophisticated computer-driven system upgrades the existing ARTS III system by providing improved tracking, continuous data recording, and fail-soft capabilities.

**b.** Common ARTS. Includes ARTS IIE, ARTS IIIE; and ARTS IIIE with ACD (see DTAS) which combines functionalities of the previous ARTS systems.

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), Automated Weather Sensor System (AWSS) 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 U.S. 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 GPS−derived position and other information such as velocity over the data link, which is received by a ground−based transmitter/receiver (transceiver) for processing and display at an air traffic control facility.
(See GLOBAL POSITIONING SYSTEM.)
(See GROUND−BASED TRANSCEIVER.)

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) is a datalink translation function of the ADS−B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 ES). 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, breaking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/AWSS/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.

**a.** Autorotative Landing/Touchdown Autorotation. Used by a pilot to indicate that the landing will be made without applying power to the rotor.

**b.** Low Level Autorotation. Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.

**c.** 180 degrees Autorotation. Initiated from a downwind heading and is commenced well inside the normal traffic pattern. "Go around" may not be possible during the latter part of this maneuver.

AVAILABLE LANDING DISTANCE (ALD)− The portion of a runway available for landing and roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

AVIATION WEATHER SERVICE− A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS.

(See TRANSCRIBED WEATHER BROADCAST.)
(See WEATHER ADVISORY.)
(Refer to AIM.)

AWW−

(See SEVERE WEATHER FORECAST ALERTS.)

# B

***BACK-TAXI*****–** A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.

BASE LEG–
(See TRAFFIC PATTERN.)

BEACON–
(See AERONAUTICAL BEACON.)
(See AIRPORT ROTATING BEACON.)
(See AIRWAY BEACON.)
(See MARKER BEACON.)
(See NONDIRECTIONAL BEACON.)
(See RADAR.)

BEARING– The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees.
(See NONDIRECTIONAL BEACON.)

BELOW MINIMUMS– Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

BLAST FENCE– A barrier that is used to divert or dissipate jet or propeller blast.

BLAST PAD– A surface adjacent to the ends of a runway provided to reduce the erosive effect of jet blast and propeller wash.

BLIND SPEED– The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.
(See ICAO term BLIND VELOCITY.)

BLIND SPOT– An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

***BLIND TRANSMISSION*****–**
(See TRANSMITTING IN THE BLIND.)

BLIND VELOCITY [ICAO]– The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

BLIND ZONE–
(See BLIND SPOT.)

***BLOCKED*****–** Phraseology used to indicate that a radio transmission has been distorted or interrupted due to multiple simultaneous radio transmissions.

BOTTOM ALTITUDE– In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.

BOUNDARY LIGHTS–
(See AIRPORT LIGHTING.)

***BRAKING ACTION (GOOD, MEDIUM, POOR, OR NIL)*****–** A report of conditions on the airport movement area providing a pilot with a degree/quality of braking that he/she might expect. Braking action is reported in terms of good, good to medium, medium, medium to poor, or nil.
(See RUNWAY CONDITION READING.)

BRAKING ACTION ADVISORIES– When tower controllers have received runway braking action reports which include the terms "medium," "poor," or "nil," or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, "Braking action advisories are in effect" on the ATIS broadcast. During the time braking action advisories are in effect, ATC will issue the latest braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not volunteered by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing.

BREAKOUT– A technique to direct aircraft out of the approach stream. In the context of simultaneous (independent) parallel operations, a breakout is used to direct threatened aircraft away from a deviating aircraft.

BROADCAST– Transmission of information for which an acknowledgement is not expected.
(See ICAO term BROADCAST.)

BROADCAST [ICAO]− A transmission of information relating to air navigation that is not addressed to a specific station or stations.

# C

CALCULATED LANDING TIME− A term that may be used in place of tentative or actual calculated landing time, whichever applies.

CALL FOR RELEASE− Wherein the overlying ARTCC requires a terminal facility to initiate verbal coordination to secure ARTCC approval for release of a departure into the en route environment.

CALL UP− Initial voice contact between a facility and an aircraft, using the identification of the unit being called and the unit initiating the call.
(Refer to AIM.)

CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE− That portion of Canadian domestic airspace within which MNPS separation may be applied.

CARDINAL ALTITUDES− "Odd" or "Even" thousand-foot altitudes or flight levels; e.g., 5,000, 6,000, 7,000, FL 250, FL 260, FL 270.
(See ALTITUDE.)
(See FLIGHT LEVEL.)

CARDINAL FLIGHT LEVELS−
(See CARDINAL ALTITUDES.)

CAT−
(See CLEAR-AIR TURBULENCE.)

CATCH POINT− A fix/waypoint that serves as a transition point from the high altitude waypoint navigation structure to an arrival procedure (STAR) or the low altitude ground−based navigation structure.

CEILING− The heights above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration," and not classified as "thin" or "partial."
(See ICAO term CEILING.)

CEILING [ICAO]− The height above the ground or water of the base of the lowest layer of cloud below 6,000 meters (20,000 feet) covering more than half the sky.

CENRAP−
(See CENTER RADAR ARTS PRESENTATION/PROCESSING.)

CENRAP-PLUS−
(See CENTER RADAR ARTS PRESENTATION/PROCESSING-PLUS.)

CENTER−
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

CENTER'S AREA− The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

CENTER RADAR ARTS PRESENTATION/PROCESSING− A computer program developed to provide a back-up system for airport surveillance radar in the event of a failure or malfunction. The program uses air route traffic control center radar for the processing and presentation of data on the ARTS IIA or IIIA displays.

CENTER RADAR ARTS PRESENTATION/PROCESSING-PLUS− A computer program developed to provide a back-up system for airport surveillance radar in the event of a terminal secondary radar system failure. The program uses a combination of Air Route Traffic Control Center Radar and terminal airport surveillance radar primary targets displayed simultaneously for the processing and presentation of data on the ARTS IIA or IIIA displays.

CENTER TRACON AUTOMATION SYSTEM (CTAS)− A computerized set of programs designed to aid Air Route Traffic Control Centers and TRACONs in the management and control of air traffic.

CENTER WEATHER ADVISORY− An unscheduled weather advisory issued by Center Weather Service Unit meteorologists for ATC use to alert pilots of existing or anticipated adverse weather conditions within the next 2 hours. A CWA may modify or redefine a SIGMET.
(See AWW.)
(See AIRMET.)
(See CONVECTIVE SIGMET.)
(See SIGMET.)
(Refer to AIM.)

CENTRAL EAST PACIFIC− An organized route system between the U.S. West Coast and Hawaii.

CEP−
(See CENTRAL EAST PACIFIC.)

CERAP−
(See COMBINED CENTER-RAPCON.)

CERTIFIED TOWER RADAR DISPLAY (CTRD)− A FAA radar display certified for use in the NAS.

CFR−
(See CALL FOR RELEASE.)

CHAFF− Thin, narrow metallic reflectors of various lengths and frequency responses, used to reflect radar energy. These reflectors when dropped from aircraft and allowed to drift downward result in large targets on the radar display.

CHART SUPPLEMENT U.S.− A publication designed primarily as a pilot's operational manual containing all airports, seaplane bases, and heliports open to the public including communications data, navigational facilities, and certain special notices and procedures. This publication is issued in seven volumes according to geographical area.

CHARTED VFR FLYWAYS− Charted VFR Flyways are flight paths recommended for use to bypass areas heavily traversed by large turbine-powered aircraft. Pilot compliance with recommended flyways and associated altitudes is strictly voluntary. VFR Flyway Planning charts are published on the back of existing VFR Terminal Area charts.

CHARTED VISUAL FLIGHT PROCEDURE APPROACH− An approach conducted while operating on an instrument flight rules (IFR) flight plan which authorizes the pilot of an aircraft to proceed visually and clear of clouds to the airport via visual landmarks and other information depicted on a charted visual flight procedure. This approach must be authorized and under the control of the appropriate air traffic control facility. Weather minimums required are depicted on the chart.

***CHASE***− An aircraft flown in proximity to another aircraft normally to observe its performance during training or testing.

CHASE AIRCRAFT−
(See CHASE.)

CIRCLE-TO-LAND MANEUVER− A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or is not desirable. At tower controlled airports, this maneuver is made only after ATC authorization has been obtained and the pilot has established required visual reference to the airport.
(See CIRCLE TO RUNWAY.)
(See LANDING MINIMUMS.)
(Refer to AIM.)

***CIRCLE TO RUNWAY (RUNWAY NUMBER)***− Used by ATC to inform the pilot that he/she must circle to land because the runway in use is other than the runway aligned with the instrument approach procedure. When the direction of the circling maneuver in relation to the airport/runway is required, the controller will state the direction (eight cardinal compass points) and specify a left or right downwind or base leg as appropriate; e.g., "Cleared VOR Runway Three Six Approach circle to Runway Two Two," or "Circle northwest of the airport for a right downwind to Runway Two Two."
(See CIRCLE-TO-LAND MANEUVER.)
(See LANDING MINIMUMS.)
(Refer to AIM.)

CIRCLING APPROACH−
(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MANEUVER−
(See CIRCLE-TO-LAND MANEUVER.)

CIRCLING MINIMA−
(See LANDING MINIMUMS.)

CLASS A AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS B AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS C AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS D AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS E AIRSPACE−
(See CONTROLLED AIRSPACE.)

CLASS G AIRSPACE− That airspace not designated as Class A, B, C, D or E.

CLEAR AIR TURBULENCE (CAT)− Turbulence encountered in air where no clouds are present. This term is commonly applied to high-level turbulence associated with wind shear. CAT is often encountered in the vicinity of the jet stream.

(See WIND SHEAR.)
(See JET STREAM.)

CLEAR OF THE RUNWAY−

**a.** Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the aircraft are held short of the applicable runway holding position marking.

**b.** A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking.

**c.** Pilots and controllers shall exercise good judgement to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.

***CLEARANCE−***
(See AIR TRAFFIC CLEARANCE.)

CLEARANCE LIMIT− The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.

(See ICAO term CLEARANCE LIMIT.)

CLEARANCE LIMIT [ICAO]− The point to which an aircraft is granted an air traffic control clearance.

***CLEARANCE VOID IF NOT OFF BY (TIME)−*** Used by ATC to advise an aircraft that the departure clearance is automatically canceled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his/her IFR flight plan if not off by the specified time.

(See ICAO term CLEARANCE VOID TIME.)

CLEARANCE VOID TIME [ICAO]− A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

***CLEARED APPROACH−*** ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.

(See CLEARED (Type of) APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

***CLEARED (Type of) APPROACH−*** ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared ILS Runway Three Six Approach."

(See APPROACH CLEARANCE.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

***CLEARED AS FILED−*** Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.

(See REQUEST FULL ROUTE CLEARANCE.)
(Refer to AIM.)

***CLEARED FOR TAKEOFF−*** ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

***CLEARED FOR THE OPTION−*** ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations.

(See OPTION APPROACH.)
(Refer to AIM.)

***CLEARED THROUGH−*** ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

***CLEARED TO LAND−*** ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

CLEARWAY− An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated.

(Refer to 14 CFR Part 1.)

***CLIMB TO VFR−*** ATC authorization for an aircraft to climb to VFR conditions within Class B, C, D, and E surface areas when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR.

(See SPECIAL VFR CONDITIONS.)
(Refer to AIM.)

CLIMBOUT− That portion of flight operation between takeoff and the initial cruising altitude.

CLIMB VIA– An abbreviated ATC clearance that requires compliance with the procedure lateral path, associated speed restrictions, and altitude restrictions along the cleared route or procedure.

CLOSE PARALLEL RUNWAYS− Two parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3000 feet (750 feet for SOIA operations) that are authorized to conduct simultaneous independent approach operations. PRM and simultaneous close parallel appear in approach title. Dual communications, special pilot training, an Attention All Users Page (AAUP), NTZ monitoring by displays that have aural and visual alerting algorithms are required. A high update rate surveillance sensor is required for certain runway or approach course spacing.

CLOSED RUNWAY− A runway that is unusable for aircraft operations. Only the airport management/ military operations office can close a runway.

CLOSED TRAFFIC− Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

CLOUD− A cloud is a visible accumulation of minute water droplets and/or ice particles in the atmosphere above the Earth's surface. Cloud differs from ground fog, fog, or ice fog only in that the latter are, by definition, in contact with the Earth's surface.

CLT−

(See CALCULATED LANDING TIME.)

CLUTTER− In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar.

(See CHAFF.)
(See GROUND CLUTTER.)
(See PRECIPITATION.)
(See TARGET.)
(See ICAO term RADAR CLUTTER.)

CMNPS−

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

COASTAL FIX− A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

CODES− The number assigned to a particular multiple pulse reply signal transmitted by a transponder.

(See DISCRETE CODE.)

COLD TEMPERATURE COMPENSATION− An action on the part of the pilot to adjust an aircraft's indicated altitude due to the effect of cold temperatures on true altitude above terrain versus aircraft indicated altitude. The amount of compensation required increases at a greater rate with a decrease in temperature and increase in height above the reporting station.

COLLABORATIVE TRAJECTORY OPTIONS PROGRAM (CTOP)- CTOP is a traffic management program administered by the Air Traffic Control System Command Center (ATCSCC) that manages demand through constrained airspace, while considering operator preference with regard to both route and delay as defined in a Trajectory Options Set (TOS).

COMBINED CENTER-RAPCON− An air traffic facility which combines the functions of an ARTCC and a radar approach control facility.

(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT− A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION−
(See COMMON ROUTE.)

COMMON ROUTE− That segment of a North American Route between the inland navigation facility and the coastal fix.

**OR**

COMMON ROUTE− Typically the portion of a RNAV STAR between the en route transition end point and the runway transition start point; however, the common route may only consist of a single point that joins the en route and runway transitions.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)− A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.
(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)
(Refer to AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers.)

COMPASS LOCATOR− A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

**a.** Outer Compass Locator (LOM)− A compass locator installed at the site of the outer marker of an instrument landing system.
(See OUTER MARKER.)

**b.** Middle Compass Locator (LMM)− A compass locator installed at the site of the middle marker of an instrument landing system.
(See MIDDLE MARKER.)
(See ICAO term LOCATOR.)

COMPASS ROSE− A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

COMPLY WITH RESTRICTIONS− An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

COMPOSITE FLIGHT PLAN− A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations.
(Refer to AIM.)

COMPOSITE ROUTE SYSTEM− An organized oceanic route structure, incorporating reduced lateral spacing between routes, in which composite separation is authorized.

COMPOSITE SEPARATION− A method of separating aircraft in a composite route system where, by management of route and altitude assignments, a combination of half the lateral minimum specified for the area concerned and half the vertical minimum is applied.

COMPULSORY REPORTING POINTS− Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

CONFIDENCE MANEUVER− A confidence maneuver consists of one or more turns, a climb or descent, or other maneuver to determine if the pilot in command (PIC) is able to receive and comply with ATC instructions.

CONFLICT ALERT− A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between tracked targets (known IFR or VFR aircraft) that require his/her immediate attention/action.
(See MODE C INTRUDER ALERT.)

CONFLICT RESOLUTION− The resolution of potential conflictions between aircraft that are radar identified and in communication with ATC by ensuring that radar targets do not touch. Pertinent traffic advisories shall be issued when this procedure is applied.

Note: This procedure shall not be provided utilizing mosaic radar systems.

CONFORMANCE− The condition established when an aircraft's actual position is within the conformance region constructed around that aircraft at its position, according to the trajectory associated with the aircraft's Current Plan.

CONFORMANCE REGION− A volume, bounded laterally, vertically, and longitudinally, within which an aircraft must be at a given time in order to be in conformance with the Current Plan Trajectory for that aircraft. At a given time, the conformance region is determined by the simultaneous application of the lateral, vertical, and longitudinal conformance bounds for the aircraft at the position defined by time and aircraft's trajectory.

CONSOLAN− A low frequency, long-distance NAVAID used principally for transoceanic navigations.

CONTACT−

**a.** Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).

**b.** A flight condition wherein the pilot ascertains the attitude of his/her aircraft and navigates by visual reference to the surface.

(See CONTACT APPROACH.)
(See RADAR CONTACT.)

***CONTACT APPROACH−*** An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.

(Refer to AIM.)

CONTAMINATED RUNWAY− A runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances are present. A runway is contaminated with respect to rubber deposits or other friction-degrading substances when the average friction value for any 500-foot segment of the runway within the ALD fails below the recommended minimum friction level and the average friction value in the adjacent 500-foot segments falls below the maintenance planning friction level.

CONTERMINOUS U.S.− The 48 adjoining States and the District of Columbia.

CONTINENTAL UNITED STATES− The 49 States located on the continent of North America and the District of Columbia.

CONTINUE− When used as a control instruction should be followed by another word or words clarifying what is expected of the pilot. Example: "continue taxi," "continue descent," "continue inbound," etc.

CONTROL AREA [ICAO]− A controlled airspace extending upwards from a specified limit above the earth.

CONTROL SECTOR− An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot-communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector.

(See DISCRETE FREQUENCY.)

CONTROL SLASH− A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

CONTROLLED AIRSPACE− An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

**a.** Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

**b.** Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in 14 CFR Part 91 (for specific operating requirements, please refer to 14 CFR Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to 14 CFR Part 71).

**c.** Controlled airspace in the United States is designated as follows:

**1.** CLASS A− Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

**2.** CLASS B− Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspaces areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

**3.** CLASS C− Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 nautical mile (NM) radius, a circle with a 10NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

**4.** CLASS D− Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

**5.** CLASS E− Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

CONTROLLED AIRSPACE [ICAO]− An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Note: Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D, and E.

CONTROLLED TIME OF ARRIVAL− Arrival time assigned during a Traffic Management Program. This time may be modified due to adjustments or user options.

CONTROLLER−
(See AIR TRAFFIC CONTROL SPECIALIST.)

CONTROLLER [ICAO]− A person authorized to provide air traffic control services.

CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)− A two−way digital communications system that conveys textual air traffic control messages between controllers and pilots using ground or satellite-based radio relay stations.

***CONVECTIVE SIGMET−*** A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMETs are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an area coverage of $^{4}/_{10}$ (40%) or more, and hail $^{3}/_{4}$ inch or greater.

(See AIRMET.)
(See AWW.)
(See CWA.)
(See SIGMET.)
(Refer to AIM.)

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION−
(See CONVECTIVE SIGMET.)

COORDINATES− The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

COORDINATION FIX− The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

COPTER−
(See HELICOPTER.)

CORRECTION− An error has been made in the transmission and the correct version follows.

COUPLED APPROACH− An instrument approach performed by the aircraft autopilot, and/or visually depicted on the flight director, which is receiving position information and/or steering commands from onboard navigational equipment. In general, coupled non-precision approaches must be flown manually (autopilot disengaged) at altitudes lower than 50 feet AGL below the minimum descent altitude, and coupled precision approaches must be flown manually (autopilot disengaged) below 50 feet AGL unless authorized to conduct autoland operations. Coupled instrument approaches are commonly flown to the allowable IFR weather minima established by the operator or PIC, or flown VFR for training and safety.

COURSE−

**a.** The intended direction of flight in the horizontal plane measured in degrees from north.

**b.** The ILS localizer signal pattern usually specified as the front course or the back course.

(See BEARING.)
(See INSTRUMENT LANDING SYSTEM.)
(See RADIAL.)

CPDLC−
(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]−
(See ICAO term CURRENT FLIGHT PLAN.)

CRITICAL ENGINE− The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

***CROSS (FIX) AT (ALTITUDE)−*** Used by ATC when a specific altitude restriction at a specified fix is required.

***CROSS (FIX) AT OR ABOVE (ALTITUDE)−*** Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment.

(See ALTITUDE RESTRICTION.)
(Refer to AIM.)

***CROSS (FIX) AT OR BELOW (ALTITUDE)−*** Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude.

(See ALTITUDE RESTRICTION.)
(See MINIMUM IFR ALTITUDES.)
(Refer to 14 CFR Part 91.)

CROSSWIND−

**a.** When used concerning the traffic pattern, the word means "crosswind leg."

(See TRAFFIC PATTERN.)

**b.** When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft.

(See CROSSWIND COMPONENT.)

CROSSWIND COMPONENT− The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

***CRUISE−*** Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he/she may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

**a.** An airport clearance limit at locations with a standard/special instrument approach procedure. The CFRs require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or

**b.** An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZATION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in Class G airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable CFRs governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed.

(See INSTRUMENT APPROACH PROCEDURE.)

CRUISE CLIMB− A climb technique employed by aircraft, usually at a constant power setting, resulting in an increase of altitude as the aircraft weight decreases.

CRUISING ALTITUDE− An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.

(See ALTITUDE.)
(See ICAO term CRUISING LEVEL.)

CRUISING LEVEL−

(See CRUISING ALTITUDE.)

CRUISING LEVEL [ICAO]− A level maintained during a significant portion of a flight.

CT MESSAGE− An EDCT time generated by the ATCSCC to regulate traffic at arrival airports. Normally, a CT message is automatically transferred from the traffic management system computer to the NAS en route computer and appears as an EDCT. In the event of a communication failure between the traffic management system computer and the NAS, the CT message can be manually entered by the TMC at the en route facility.

CTA−

(See CONTROLLED TIME OF ARRIVAL.)
(See ICAO term CONTROL AREA.)

CTAF−

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTAS−

(See CENTER TRACON AUTOMATION SYSTEM.)

CTOP−

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD−

(See CERTIFIED TOWER RADAR DISPLAY.)

CURRENT FLIGHT PLAN [ICAO]− The flight plan, including changes, if any, brought about by subsequent clearances.

CURRENT PLAN− The ATC clearance the aircraft has received and is expected to fly.

CVFP APPROACH−

(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA−

(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

# D

D-ATIS−

(See DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE.)

DA [ICAO]−

(See ICAO Term DECISION ALTITUDE/DECISION HEIGHT.)

DAIR−

(See DIRECT ALTITUDE AND IDENTITY READOUT.)

DANGER AREA [ICAO]− An airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

Note: The term "Danger Area" is not used in reference to areas within the United States or any of its possessions or territories.

DAS−

(See DELAY ASSIGNMENT.)

DATA BLOCK−

(See ALPHANUMERIC DISPLAY.)

DEAD RECKONING− Dead reckoning, as applied to flying, is the navigation of an airplane solely by means of computations based on airspeed, course, heading, wind direction, and speed, groundspeed, and elapsed time.

DECISION ALTITUDE/DECISION HEIGHT [ICAO Annex 6]- A specified altitude or height (A/H) in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

1. Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.

2. Category II and III minima are expressed as a DH and not a DA. Minima is assessed by reference to a radio altimeter and not a barometric altimeter, which makes the minima a DH.

3. The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

Decision altitude (DA) - A specified altitude (mean sea level (MSL)) on an instrument approach procedure (ILS, GLS, vertically guided RNAV) at which the pilot must decide whether to continue the approach or initiate an immediate missed approach if the pilot does not see the required visual references.

DECISION HEIGHT− With respect to the operation of aircraft, means the height at which a decision must be made during an ILS or PAR instrument approach to either continue the approach or to execute a missed approach.

(See ICAO term DECISION ALTITUDE/DECISION HEIGHT.)

DECODER− The device used to decipher signals received from ATCRBS transponders to effect their display as select codes.

(See CODES.)
(See RADAR.)

DEFENSE AREA- Any airspace of the contiguous United States that is not an ADIZ in which the control of aircraft is required for reasons of national security.

DEFENSE VISUAL FLIGHT RULES− Rules applicable to flights within an ADIZ conducted under the visual flight rules in 14 CFR Part 91.

(See AIR DEFENSE IDENTIFICATION ZONE.)
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 99.)

DELAY ASSIGNMENT (DAS)− Delays are distributed to aircraft based on the traffic management program parameters. The delay assignment is calculated in 15−minute increments and appears as a table in Traffic Flow Management System (TFMS).

DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)− Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft on the runway, terminal or center area saturation, weather below landing minimums, etc.

(See EXPECT FURTHER CLEARANCE (TIME).)

DELAY TIME− The amount of time that the arrival must lose to cross the meter fix at the assigned meter fix time. This is the difference between ACLT and VTA.

DEPARTURE CENTER− The ARTCC having jurisdiction for the airspace that generates a flight to the impacted airport.

DEPARTURE CONTROL− A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft.
(See APPROACH CONTROL FACILITY.)
(Refer to AIM.)

DEPARTURE SEQUENCING PROGRAM− A program designed to assist in achieving a specified interval over a common point for departures.

DEPARTURE TIME− The time an aircraft becomes airborne.

DESCEND VIA– An abbreviated ATC clearance that requires compliance with a published procedure lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions.

DESCENT SPEED ADJUSTMENTS− Speed deceleration calculations made to determine an accurate VTA. These calculations start at the transition point and use arrival speed segments to the vertex.

DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA- In Alaska, in addition to being designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating airport traffic control tower, a CTAF may also be designated for the purpose of carrying out advisory practices for operations in and through areas with a high volume of VFR traffic.

DESIRED COURSE−

**a.** True− A predetermined desired course direction to be followed (measured in degrees from true north).

**b.** Magnetic− A predetermined desired course direction to be followed (measured in degrees from local magnetic north).

DESIRED TRACK− The planned or intended track between two waypoints. It is measured in degrees from either magnetic or true north. The instantaneous angle may change from point to point along the great circle track between waypoints.

DETRESFA (DISTRESS PHASE) [ICAO]− The code word used to designate an emergency phase wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

DEVIATIONS−

**a.** A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.

**b.** Where specifically authorized in the CFRs and requested by the pilot, ATC may permit pilots to deviate from certain regulations.

DH−
(See DECISION HEIGHT.)

DH [ICAO]−
(See ICAO Term DECISION ALTITUDE/ DECISION HEIGHT.)

DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE (D-ATIS)− The service provides text messages to aircraft, airlines, and other users outside the standard reception range of conventional ATIS via landline and data link communications to the cockpit. Also, the service provides a computer−synthesized voice message that can be transmitted to all aircraft within range of existing transmitters. The Terminal Data Link System (TDLS) D-ATIS application uses weather inputs from local automated weather sources or manually entered meteorological data together with preprogrammed menus to provide standard information to users. Airports with D-ATIS capability are listed in the Chart Supplement U.S.

DIGITAL TARGET− A computer−generated symbol representing an aircraft's position, based on a primary return or radar beacon reply, shown on a digital display.

DIGITAL TERMINAL AUTOMATION SYSTEM (DTAS)− A system where digital radar and beacon data is presented on digital displays and the operational program monitors the system performance on a real−time basis.

DIGITIZED TARGET− A computer−generated indication shown on an analog radar display resulting from a primary radar return or a radar beacon reply.

***DIRECT−*** Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

DIRECTLY BEHIND− An aircraft is considered to be operating directly behind when it is following the actual flight path of the lead aircraft over the surface of the earth except when applying wake turbulence separation criteria.

DISCRETE BEACON CODE−
(See DISCRETE CODE.)

DISCRETE CODE− As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; nondiscrete codes: 0100, 1200, 7700. Nondiscrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc.
(See RADAR.)
(Refer to AIM.)

DISCRETE FREQUENCY− A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Chart Supplement U.S. and the DOD FLIP IFR En Route Supplement.
(See CONTROL SECTOR.)

DISPLACED THRESHOLD− A threshold that is located at a point on the runway other than the designated beginning of the runway.
(See THRESHOLD.)
(Refer to AIM.)

DISTANCE MEASURING EQUIPMENT (DME)− Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.
(See TACAN.)
(See VORTAC.)

DISTRESS− A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

DIVE BRAKES−
(See SPEED BRAKES.)

DIVERSE VECTOR AREA− In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures, obstacles and terrain avoidance, may be issued to departing aircraft.

DIVERSION (DVRSN)− Flights that are required to land at other than their original destination for reasons beyond the control of the pilot/company, e.g. periods of significant weather.

DME−
(See DISTANCE MEASURING EQUIPMENT.)

DME FIX− A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid.
(See DISTANCE MEASURING EQUIPMENT.)
(See FIX.)

DME SEPARATION− Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME).
(See DISTANCE MEASURING EQUIPMENT.)

DOD FLIP− Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the National Geospatial−Intelligence Agency (NGA) for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

DOMESTIC AIRSPACE− Airspace which overlies the continental land mass of the United States plus Hawaii and U.S. possessions. Domestic airspace extends to 12 miles offshore.

DOWNBURST− A strong downdraft which induces an outburst of damaging winds on or near the ground. Damaging winds, either straight or curved, are highly divergent. The sizes of downbursts vary from 1/2 mile or less to more than 10 miles. An intense downburst often causes widespread damage. Damaging winds, lasting 5 to 30 minutes, could reach speeds as high as 120 knots.

DOWNWIND LEG−
(See TRAFFIC PATTERN.)

DP−
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRAG CHUTE− A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

DROP ZONE− Any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop.
(Refer to 14 CFR §105.3, Definitions)

DSP−
(See DEPARTURE SEQUENCING PROGRAM.)

DT−
(See DELAY TIME.)

DTAS−
(See DIGITAL TERMINAL AUTOMATION SYSTEM.)

DUE REGARD− A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.
(See also FAAO JO 7110.65, Para 1−2−1, WORD MEANINGS.)

DUTY RUNWAY−
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

DVA−
(See DIVERSE VECTOR AREA.)

DVFR−
(See DEFENSE VISUAL FLIGHT RULES.)

DVFR FLIGHT PLAN− A flight plan filed for a VFR aircraft which intends to operate in airspace within which the ready identification, location, and control of aircraft are required in the interest of national security.

DVRSN−
(See DIVERSION.)

DYNAMIC− Continuous review, evaluation, and change to meet demands.

DYNAMIC RESTRICTIONS− Those restrictions imposed by the local facility on an "as needed" basis to manage unpredictable fluctuations in traffic demands.

# E

EAS−
(See EN ROUTE AUTOMATION SYSTEM.)

EDCT−
(See EXPECT DEPARTURE CLEARANCE TIME.)

EDST−
(See EN ROUTE DECISION SUPPORT TOOL)

EFC−
(See EXPECT FURTHER CLEARANCE (TIME).)

ELT−
(See EMERGENCY LOCATOR TRANSMITTER.)

***EMERGENCY−*** A distress or an urgency condition.

EMERGENCY LOCATOR TRANSMITTER− A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident.
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

E-MSAW−
(See EN ROUTE MINIMUM SAFE ALTITUDE WARNING.)

EN ROUTE AIR TRAFFIC CONTROL SERVICES− Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

EN ROUTE AUTOMATION SYSTEM (EAS)− The complex integrated environment consisting of situation display systems, surveillance systems and flight data processing, remote devices, decision support tools, and the related communications equipment that form the heart of the automated IFR air traffic control system. It interfaces with automated terminal systems and is used in the control of en route IFR aircraft.
(Refer to AIM.)

EN ROUTE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE DECISION SUPPORT TOOL− An automated tool provided at each Radar Associate position in selected En Route facilities. This tool utilizes flight and radar data to determine present and future trajectories for all active and proposal aircraft and provides enhanced automated flight data management.

EN ROUTE DESCENT− Descent from the en route cruising altitude which takes place along the route of flight.

EN ROUTE HIGH ALTITUDE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE LOW ALTITUDE CHARTS−
(See AERONAUTICAL CHART.)

EN ROUTE MINIMUM SAFE ALTITUDE WARNING− A function of the EAS that aids the controller by providing an alert when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

EN ROUTE SPACING PROGRAM (ESP)− A program designed to assist the exit sector in achieving the required in-trail spacing.

EN ROUTE TRANSITION−

**a.** Conventional STARs/SIDs. The portion of a SID/STAR that connects to one or more en route airway/jet route.

**b.** RNAV STARs/SIDs. The portion of a STAR preceding the common route or point, or for a SID the portion following, that is coded for a specific en route fix, airway or jet route.

ESP−
(See EN ROUTE SPACING PROGRAM.)

ESTABLISHED−To be stable or fixed on a route, route segment, altitude, heading, etc.

ESTIMATED ELAPSED TIME [ICAO]− The estimated time required to proceed from one significant point to another.

(See ICAO Term TOTAL ESTIMATED ELAPSED TIME.)

ESTIMATED OFF-BLOCK TIME [ICAO]− The estimated time at which the aircraft will commence movement associated with departure.

ESTIMATED POSITION ERROR (EPE)−

(See Required Navigation Performance)

ESTIMATED TIME OF ARRIVAL− The time the flight is estimated to arrive at the gate (scheduled operators) or the actual runway on times for nonscheduled operators.

ESTIMATED TIME EN ROUTE− The estimated flying time from departure point to destination (lift-off to touchdown).

ETA−

(See ESTIMATED TIME OF ARRIVAL.)

ETE−

(See ESTIMATED TIME EN ROUTE.)

***EXECUTE MISSED APPROACH−*** Instructions issued to a pilot making an instrument approach which means continue inbound to the missed approach point and execute the missed approach procedure as described on the Instrument Approach Procedure Chart or as previously assigned by ATC. The pilot may climb immediately to the altitude specified in the missed approach procedure upon making a missed approach. No turns should be initiated prior to reaching the missed approach point. When conducting an ASR or PAR approach, execute the assigned missed approach procedure immediately upon receiving instructions to "execute missed approach."

(Refer to AIM.)

***EXPECT (ALTITUDE) AT (TIME) or (FIX)−*** Used under certain conditions to provide a pilot with an altitude to be used in the event of two-way communications failure. It also provides altitude information to assist the pilot in planning.

(Refer to AIM.)

EXPECT DEPARTURE CLEARANCE TIME (EDCT)− The runway release time assigned to an aircraft in a traffic management program and shown on the flight progress strip as an EDCT.

(See GROUND DELAY PROGRAM.)

***EXPECT FURTHER CLEARANCE (TIME)−*** The time a pilot can expect to receive clearance beyond a clearance limit.

***EXPECT FURTHER CLEARANCE VIA (AIRWAYS, ROUTES OR FIXES)−*** Used to inform a pilot of the routing he/she can expect if any part of the route beyond a short range clearance limit differs from that filed.

***EXPEDITE−*** Used by ATC when prompt compliance is required to avoid the development of an imminent situation. Expedite climb/descent normally indicates to a pilot that the approximate best rate of climb/descent should be used without requiring an exceptional change in aircraft handling characteristics.

power or control. The standard overhead approach starts at a relatively high altitude over a runway (“high key”) followed by a continuous 180 degree turn to a high, wide position (“low key”) followed by a continuous 180 degree turn final. The standard straight-in pattern starts at a point that results in a straight-in approach with a high rate of descent to the runway. Flameout approaches terminate in the type approach requested by the pilot (normally fullstop).

FLIGHT CHECK− A call-sign prefix used by FAA aircraft engaged in flight inspection/certification of navigational aids and flight procedures. The word “recorded” may be added as a suffix; e.g., “Flight Check 320 recorded” to indicate that an automated flight inspection is in progress in terminal areas.

(See FLIGHT INSPECTION.)

(Refer to AIM.)

FLIGHT FOLLOWING−

(See TRAFFIC ADVISORIES.)

FLIGHT INFORMATION REGION− An airspace of defined dimensions within which Flight Information Service and Alerting Service are provided.

**a.** Flight Information Service. A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

**b.** Alerting Service. A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and to assist such organizations as required.

FLIGHT INFORMATION SERVICE− A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

FLIGHT INFORMATION SERVICE− BROADCAST (FIS−B)− A ground broadcast service provided through the ADS−B Broadcast Services network over the UAT data link that operates on 978 MHz. The FIS−B system provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and aeronautical information.

FLIGHT INSPECTION− Inflight investigation and evaluation of a navigational aid to determine whether it meets established tolerances.

(See FLIGHT CHECK.)

(See NAVIGATIONAL AID.)

***FLIGHT LEVEL***− A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level (FL) 250 represents a barometric altimeter indication of 25,000 feet; FL 255, an indication of 25,500 feet.

(See ICAO term FLIGHT LEVEL.)

FLIGHT LEVEL [ICAO]− A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 hPa (1013.2 mb), and is separated from other such surfaces by specific pressure intervals.

Note 1: A pressure type altimeter calibrated in accordance with the standard atmosphere:

**a.** When set to a QNH altimeter setting, will indicate altitude;

**b.** When set to a QFE altimeter setting, will indicate height above the QFE reference datum; and

**c.** When set to a pressure of 1013.2 hPa (1013.2 mb), may be used to indicate flight levels.

Note 2: The terms ‘height’ and ‘altitude,’ used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

FLIGHT LINE− A term used to describe the precise movement of a civil photogrammetric aircraft along a predetermined course(s) at a predetermined altitude during the actual photographic run.

FLIGHT MANAGEMENT SYSTEMS− A computer system that uses a large data base to allow routes to be preprogrammed and fed into the system by means of a data loader. The system is constantly updated with respect to position accuracy by reference to conventional navigation aids. The sophisticated program and its associated data base ensures that the most appropriate aids are automatically selected during the information update cycle.

FLIGHT MANAGEMENT SYSTEM PROCEDURE− An arrival, departure, or approach procedure developed for use by aircraft with a slant (/) E or slant (/) F equipment suffix.

FLIGHT PATH− A line, course, or track along which an aircraft is flying or intended to be flown.

(See COURSE.)
(See TRACK.)

FLIGHT PLAN− Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.

(See FAST FILE.)
(See FILED.)
(Refer to AIM.)

FLIGHT PLAN AREA (FPA)− The geographical area assigned to a flight service station (FSS) for the purpose of establishing primary responsibility for services that may include search and rescue for VFR aircraft, issuance of NOTAMs, pilot briefings, inflight services, broadcast services, emergency services, flight data processing, international operations, and aviation weather services. Large consolidated FSS facilities may combine FPAs into larger areas of responsibility (AOR).

(See FLIGHT SERVICE STATION.)
(See TIE-IN FACILITY.)

FLIGHT RECORDER− A general term applied to any instrument or device that records information about the performance of an aircraft in flight or about conditions encountered in flight. Flight recorders may make records of airspeed, outside air temperature, vertical acceleration, engine RPM, manifold pressure, and other pertinent variables for a given flight.

(See ICAO term FLIGHT RECORDER.)

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, broadcast aviation weather and aeronautical information, and advise Customs and Immigration of transborder flights. 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 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 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-BY WAYPOINT− A fly-by waypoint requires the use of turn anticipation to avoid overshoot of the next flight segment.

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.)

FMA−

(See FINAL MONITOR AID.)

FMS−

(See FLIGHT MANAGEMENT SYSTEM.)

FMSP−

(See FLIGHT MANAGEMENT SYSTEM PROCEDURE.)

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 CALCULATED LANDING TIME− A dynamic parameter number of minutes prior to the meter fix calculated time of arrival for each aircraft when the TCLT is frozen and becomes an ACLT (i.e., the VTA is updated and consequently the TCLT is modified as appropriate until FCLT minutes prior to meter fix calculated time of arrival, at which time updating is suspended and an ACLT and a frozen meter fix crossing time (MFT) is assigned).

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.

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/CARTS]- 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 is characteristic of a single-sensor radar display system. Terminal areas use mono-pulse secondary surveillance radar (ASR 9, Mode S or ASR 11, MSSR).

# G

GATE HOLD PROCEDURES− Procedures at selected airports to hold aircraft at the gate or other ground location whenever departure delays exceed or are anticipated to exceed 15 minutes. The sequence for departure will be maintained in accordance with initial call−up unless modified by flow control restrictions. Pilots should monitor the ground control/clearance delivery frequency for engine start/taxi advisories or new proposed start/taxi time if the delay changes.

GBT−
(See GROUND−BASED TRANSCEIVER.)

GCA−
(See GROUND CONTROLLED APPROACH.)

GDP−
(See GROUND DELAY PROGRAM.)

GENERAL AVIATION− That portion of civil aviation that does not include scheduled or unscheduled air carriers or commercial space operations.
(See ICAO term GENERAL AVIATION.)

GENERAL AVIATION [ICAO]− All civil aviation operations other than scheduled air services and nonscheduled air transport operations for remuneration or hire.

GEO MAP− The digitized map markings associated with the ASR-9 Radar System.

GLIDEPATH−
(See GLIDESLOPE.)

GLIDEPATH [ICAO]− A descent profile determined for vertical guidance during a final approach.

GLIDEPATH INTERCEPT ALTITUDE−
(See GLIDESLOPE INTERCEPT ALTITUDE.)

GLIDESLOPE− Provides vertical guidance for aircraft during approach and landing. The glideslope/glidepath is based on the following:

**a.** Electronic components emitting signals which provide vertical guidance by reference to airborne instruments during instrument approaches such as ILS or

**b.** Visual ground aids, such as VASI, which provide vertical guidance for a VFR approach or for the visual portion of an instrument approach and landing.

**c.** PAR. Used by ATC to inform an aircraft making a PAR approach of its vertical position (elevation) relative to the descent profile.
(See ICAO term GLIDEPATH.)

GLIDESLOPE INTERCEPT ALTITUDE− The published minimum altitude to intercept the glideslope in the intermediate segment of an instrument approach. Government charts use the lightning bolt symbol to identify this intercept point. This intersection is called the Precise Final Approach fix (PFAF). ATC directs a higher altitude, the resultant intercept becomes the PFAF.
(See FINAL APPROACH FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) [ICAO]− GNSS refers collectively to the worldwide positioning, navigation, and timing determination capability available from one or more satellite constellation in conjunction with a network of ground stations.

GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE (GNSS MEA)− The minimum en route IFR altitude on a published ATS route or route segment which assures acceptable Global Navigation Satellite System reception and meets obstacle clearance requirements.
(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)

GLOBAL POSITIONING SYSTEM (GPS)− GPS refers to the worldwide positioning, navigation and timing determination capability available from the U.S. satellite constellation. The service provided by GPS for civil use is defined in the GPS Standard Positioning System Performance Standard. GPS is composed of space, control, and user elements.

GNSS [ICAO]−
(See GLOBAL NAVIGATION SATELLITE SYSTEM.)

GNSS MEA−
(See GLOBAL NAVIGATION SATELLITE SYSTEM MINIMUM EN ROUTE IFR ALTITUDE.)

***GO AHEAD−*** Proceed with your message. Not to be used for any other purpose.

***GO AROUND−*** Instructions for a pilot to abandon his/her approach to landing. Additional instructions may follow. Unless otherwise advised by ATC, a VFR aircraft or an aircraft conducting visual approach should overfly the runway while climbing to traffic pattern altitude and enter the traffic pattern via the crosswind leg. A pilot on an IFR flight plan making an instrument approach should execute the published missed approach procedure or proceed as instructed by ATC; e.g., "Go around" (additional instructions if required).
(See LOW APPROACH.)
(See MISSED APPROACH.)

GPD−
(See GRAPHIC PLAN DISPLAY.)

GPS−
(See GLOBAL POSITIONING SYSTEM.)

GRAPHIC PLAN DISPLAY (GPD)− A view available with EDST that provides a graphic display of aircraft, traffic, and notification of predicted conflicts. Graphic routes for Current Plans and Trial Plans are displayed upon controller request.
(See EN ROUTE DECISION SUPPORT TOOL.)

GROSS NAVIGATION ERROR (GNE) − A lateral deviation from a cleared track, normally in excess of 25 Nautical Miles (NM). More stringent standards (for example, 10NM in some parts of the North Atlantic region) may be used in certain regions to support reductions in lateral separation.

GROUND BASED AUGMENTATION SYSTEM (GBAS)– A ground based GNSS station which provides local differential corrections, integrity parameters and approach data via VHF data broadcast to GNSS users to meet real-time performance requirements for CAT I precision approaches. The aircraft applies the broadcast data to improve the accuracy and integrity of its GNSS signals and computes the deviations to the selected approach. A single ground station can serve multiple runway ends up to an approximate radius of 23 NM.

GROUND BASED AUGMENTATION SYSTEM (GBAS) LANDING SYSTEM (GLS)- A type of precision IAP based on local augmentation of GNSS data using a single GBAS station to transmit locally corrected GNSS data, integrity parameters and approach information. This improves the accuracy of aircraft GNSS receivers' signal in space, enabling the pilot to fly a precision approach with much greater flexibility, reliability and complexity. The GLS procedure is published on standard IAP charts, features the title GLS with the designated runway and minima as low as 200 feet DA. Future plans are expected to support Cat II and CAT III operations.

GROUND−BASED TRANSCEIVER (GBT)− The ground−based transmitter/receiver (transceiver) receives automatic dependent surveillance−broadcast messages, which are forwarded to an air traffic control facility for processing and display with other radar targets on the plan position indicator (radar display).
(See AUTOMATIC DEPENDENT SURVEILLANCE-BROADCAST.)

GROUND CLUTTER− A pattern produced on the radar scope by ground returns which may degrade other radar returns in the affected area. The effect of ground clutter is minimized by the use of moving target indicator (MTI) circuits in the radar equipment resulting in a radar presentation which displays only targets which are in motion.
(See CLUTTER.)

GROUND COMMUNICATION OUTLET (GCO)− An unstaffed, remotely controlled, ground/ground communications facility. Pilots at uncontrolled airports may contact ATC and FSS via VHF to a telephone connection to obtain an instrument clearance or close a VFR or IFR flight plan. They may also get an updated weather briefing prior to takeoff. Pilots will use four "key clicks" on the VHF radio to contact the appropriate ATC facility or six "key clicks" to contact the FSS. The GCO system is intended to be used only on the ground.

GROUND CONTROLLED APPROACH− A radar approach system operated from the ground by air traffic control personnel transmitting instructions to the pilot by radio. The approach may be conducted with surveillance radar (ASR) only or with both surveillance and precision approach radar (PAR). Usage of the term "GCA" by pilots is discouraged except when referring to a GCA facility. Pilots should specifically request a "PAR" approach when a precision radar approach is desired or request an "ASR" or "surveillance" approach when a nonprecision radar approach is desired.

(See RADAR APPROACH.)

GROUND DELAY PROGRAM (GDP)− A traffic management process administered by the ATCSCC; when aircraft are held on the ground. The purpose of the program is to support the TM mission and limit airborne holding. It is a flexible program and may be implemented in various forms depending upon the needs of the AT system. Ground delay programs provide for equitable assignment of delays to all system users.

GROUND SPEED− The speed of an aircraft relative to the surface of the earth.

GROUND STOP (GS)− The GS is a process that requires aircraft that meet a specific criteria to remain on the ground. The criteria may be airport specific, airspace specific, or equipment specific; for example, all departures to San Francisco, or all departures entering Yorktown sector, or all Category I and II aircraft going to Charlotte. GSs normally occur with little or no warning.

GROUND VISIBILITY−

(See VISIBILITY.)

GS−

(See GROUND STOP.)

# I

***I SAY AGAIN*** **−** The message will be repeated.

IAF−
(See INITIAL APPROACH FIX.)

IAP−
(See INSTRUMENT APPROACH PROCEDURE.)

IAWP− Initial Approach Waypoint

ICAO−
(See ICAO Term INTERNATIONAL CIVIL AVIATION ORGANIZATION.)

ICING− The accumulation of airframe ice.

Types of icing are:

**a.** Rime Ice− Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.

**b.** Clear Ice− A glossy, clear, or translucent ice formed by the relatively slow freezing or large supercooled water droplets.

**c.** Mixed− A mixture of clear ice and rime ice.

Intensity of icing:

**a.** Trace− Ice becomes perceptible. Rate of accumulation is slightly greater than the rate of sublimation. Deicing/anti-icing equipment is not utilized unless encountered for an extended period of time (over 1 hour).

**b.** Light− The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.

**c.** Moderate− The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment or flight diversion is necessary.

**d.** Severe− The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice, or ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by the manufacturer. Immediate exit from the condition is necessary.

Note:
Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate.

***IDENT*** **−** A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft.
(Refer to AIM.)

IDENT FEATURE− The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets.
(See IDENT.)

IF−
(See INTERMEDIATE FIX.)

IFIM−
(See INTERNATIONAL FLIGHT INFORMATION MANUAL.)

***IF NO TRANSMISSION RECEIVED FOR (TIME)*** **−** Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications.
(See LOST COMMUNICATIONS.)

IFR−
(See INSTRUMENT FLIGHT RULES.)

IFR AIRCRAFT− An aircraft conducting flight in accordance with instrument flight rules.

IFR CONDITIONS− Weather conditions below the minimum for flight under visual flight rules.
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IFR DEPARTURE PROCEDURE−
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(Refer to AIM.)

IFR FLIGHT−
(See IFR AIRCRAFT.)

IFR LANDING MINIMUMS−
(See LANDING MINIMUMS.)

IFR MILITARY TRAINING ROUTES (IR)− 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 in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES− Title 14 Code of Federal Regulations Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in FAA/DOD Instrument Approach Procedures (IAPs) Charts under a section entitled "IFR Takeoff Minimums and Departure Procedures." The FAA/DOD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, DPs, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

IF/IAWP− Intermediate Fix/Initial Approach Waypoint. The waypoint where the final approach course of a T approach meets the crossbar of the T. When designated (in conjunction with a TAA) this waypoint will be used as an IAWP when approaching the airport from certain directions, and as an IFWP when beginning the approach from another IAWP.

IFWP− Intermediate Fix Waypoint

ILS−
(See INSTRUMENT LANDING SYSTEM.)

ILS CATEGORIES− 1. Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.− 2. Special Authorization Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 150 feet and with runway visual range of not less than 1,400 feet, HUD to DH. 3. Category II. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet).− 4. Special Authorization Category II with Reduced Lighting. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet with autoland or HUD to touchdown and noted on authorization (no touchdown zone and centerline lighting are required).− 5. Category III:

**a.** IIIA.−An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

**b.** IIIB.−An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

**c.** IIIC.−An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

ILS PRM APPROACH− An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Also used in conjunction with an LDA PRM, RNAV PRM or GLS PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations. No Transgression Zone (NTZ) monitoring is required to conduct these approaches. ATC utilizes an enhanced display with alerting and, with certain runway spacing, a high update rate PRM surveillance sensor. Use of a secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are also required for all PRM approaches.
(Refer to AIM)

IM−
(See INNER MARKER.)

IMC−
(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

***IMMEDIATELY***− Used by ATC or pilots when such action compliance is required to avoid an imminent situation.

INCERFA (Uncertainty Phase) [ICAO]− A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

***INCREASE SPEED TO (SPEED)−***
(See SPEED ADJUSTMENT.)

INERTIAL NAVIGATION SYSTEM− An RNAV system which is a form of self-contained navigation.
(See Area Navigation/RNAV.)

INFLIGHT REFUELING−
(See AERIAL REFUELING.)

INFLIGHT WEATHER ADVISORY−
(See WEATHER ADVISORY.)

INFORMATION REQUEST− A request originated by an FSS for information concerning an overdue VFR aircraft.

INITIAL APPROACH FIX− The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s).
(See FIX.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT−
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT [ICAO]− That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INLAND NAVIGATION FACILITY− A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

INNER MARKER− A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he/she is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach.
(See INSTRUMENT LANDING SYSTEM.)
(Refer to AIM.)

INNER MARKER BEACON−
(See INNER MARKER.)

INREQ−
(See INFORMATION REQUEST.)

INS−
(See INERTIAL NAVIGATION SYSTEM.)

INSTRUMENT APPROACH−
(See INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE− A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

**a.** U.S. civil standard instrument approach procedures are approved by the FAA as prescribed under 14 CFR Part 97 and are available for public use.

**b.** U.S. military standard instrument approach procedures are approved and published by the Department of Defense.

**c.** Special instrument approach procedures are approved by the FAA for individual operators but are not published in 14 CFR Part 97 for public use.
(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH OPERATIONS [ICAO]* An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

**a.** A two−dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

**b.** A three−dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note: Lateral and vertical navigation guidance refers to the guidance provided either by:
a) a ground−based radio navigation aid; or
b) computer−generated navigation data from ground−based, space−based, self−contained navigation aids or a combination of these.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE [ICAO]− A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.

(See ICAO term INSTRUMENT APPROACH OPERATIONS)

INSTRUMENT APPROACH PROCEDURES CHARTS−

(See AERONAUTICAL CHART.)

INSTRUMENT DEPARTURE PROCEDURE (DP)− A preplanned instrument flight rule (IFR) departure procedure published for pilot use, in graphic or textual format, that provides obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DP, Obstacle Departure Procedure (ODP), printed either textually or graphically, and, Standard Instrument Departure (SID), which is always printed graphically.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See OBSTACLE DEPARTURE PROCEDURES.)
(See STANDARD INSTRUMENT DEPARTURES.)
(Refer to AIM.)

INSTRUMENT DEPARTURE PROCEDURE (DP) CHARTS−

(See AERONAUTICAL CHART.)

INSTRUMENT FLIGHT RULES− Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)
(See VISUAL FLIGHT RULES.)
(See VISUAL METEOROLOGICAL CONDITIONS.)
(See ICAO term INSTRUMENT FLIGHT RULES.)
(Refer to AIM.)

INSTRUMENT FLIGHT RULES [ICAO]− A set of rules governing the conduct of flight under instrument meteorological conditions.

INSTRUMENT LANDING SYSTEM− A precision instrument approach system which normally consists of the following electronic components and visual aids:

**a.** Localizer.
(See LOCALIZER.)

**b.** Glideslope.
(See GLIDESLOPE.)

**c.** Outer Marker.
(See OUTER MARKER.)

**d.** Middle Marker.
(See MIDDLE MARKER.)

**e.** Approach Lights.
(See AIRPORT LIGHTING.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

INSTRUMENT METEOROLOGICAL CONDITIONS− Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

(See INSTRUMENT FLIGHT RULES.)
(See VISUAL FLIGHT RULES.)
(See VISUAL METEOROLOGICAL CONDITIONS.)

INSTRUMENT RUNWAY− A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

(See ICAO term INSTRUMENT RUNWAY.)

INSTRUMENT RUNWAY [ICAO]− One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

**a.** Nonprecision Approach Runway−An instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach.

**b.** Precision Approach Runway, Category I−An instrument runway served by ILS and visual aids intended for operations down to 60 m (200 feet) decision height and down to an RVR of the order of 800 m.

**c.** Precision Approach Runway, Category II−An instrument runway served by ILS and visual aids intended for operations down to 30 m (100 feet) decision height and down to an RVR of the order of 400 m.

**d.** Precision Approach Runway, Category III− An instrument runway served by ILS to and along the surface of the runway and:

**1.** Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

**2.** Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

**3.** Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRITY− The ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT−
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE APPROACH SEGMENT [ICAO]− That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

INTERMEDIATE FIX− The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF).
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE LANDING− On the rare occasion that this option is requested, it should be approved. The departure center, however, must advise the ATCSCC so that the appropriate delay is carried over and assigned at the intermediate airport. An intermediate landing airport within the arrival center will not be accepted without coordination with and the approval of the ATCSCC.

INTERNATIONAL AIRPORT− Relating to international flight, it means:

**a.** An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.

**b.** A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.

**c.** Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.
(See ICAO term INTERNATIONAL AIRPORT.)
(Refer to Chart Supplement U.S.)
(Refer to IFIM.)

INTERNATIONAL AIRPORT [ICAO]− Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

INTERNATIONAL CIVIL AVIATION ORGANIZATION [ICAO]− A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

**a.** Regions include:

**1.** African-Indian Ocean Region

**2.** Caribbean Region

**3.** European Region

**4.** Middle East/Asia Region

**5.** North American Region

**6.** North Atlantic Region

**7.** Pacific Region

**8.** South American Region

INTERNATIONAL FLIGHT INFORMATION MANUAL− A publication designed primarily as a pilot's preflight planning guide for flights into foreign airspace and for flights returning to the U.S. from foreign locations.

INTERROGATOR− The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system.

(See TRANSPONDER.)
(Refer to AIM.)

INTERSECTING RUNWAYS− Two or more runways which cross or meet within their lengths.

(See INTERSECTION.)

INTERSECTION−

**a.** A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

**b.** Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

INTERSECTION DEPARTURE− A departure from any runway intersection except the end of the runway.

(See INTERSECTION.)

INTERSECTION TAKEOFF−

(See INTERSECTION DEPARTURE.)

IR−

(See IFR MILITARY TRAINING ROUTES.)

ISR− Indicates the confidence level of the track requires 5NM separation. 3NM separation, 1 1/2NM separation, and target resolution cannot be used.

# L

LAA−
(See LOCAL AIRPORT ADVISORY.)

LAAS−
(See LOW ALTITUDE ALERT SYSTEM.)

LAHSO− An acronym for "Land and Hold Short Operation." These operations include landing and holding short of an intersecting runway, a taxiway, a predetermined point, or an approach/departure flightpath.

LAHSO-DRY− Land and hold short operations on runways that are dry.

LAHSO-WET− Land and hold short operations on runways that are wet (but not contaminated).

LAND AND HOLD SHORT OPERATIONS− Operations which 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 the intersecting runway/taxiway or designated hold-short point. Pilots are expected to promptly inform the controller if the hold short clearance cannot be accepted.
(See PARALLEL RUNWAYS.)
(Refer to AIM.)

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. They must be of simple design (fixed landing gear (except if intended for operations on water or a glider) piston powered, non-pressurized, with a fixed or ground adjustable propeller), Performance is also limited to a maximum airspeed in level flight of not more than 120 knots 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 (VS1 ) of not more than 45 knots CAS. They 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, which 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/AWSS/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 with 3° of the runway alignment.

LOCALIZER TYPE DIRECTIONAL AID− 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 glidslope, 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

# N

NAS−
(See NATIONAL AIRSPACE SYSTEM.)

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− 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 CENTER− A facility in Washington D.C., established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest.
(See NATIONAL FLIGHT DATA DIGEST.)

NATIONAL FLIGHT DATA DIGEST− 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.

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 Chart Supplement U.S.

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 in conjunction with the High Altitude Redesign initiative. 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.)

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.

NFDC−

(See NATIONAL FLIGHT DATA CENTER.)

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− Authorizes 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.

NONCOMPOSITE SEPARATION− Separation in accordance with minima other than the composite separation minimum specified for the area concerned.

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.)
(See ICAO term NONRADAR SEPARATION.)

NONRADAR SEPARATION [ICAO]− The separation used when aircraft position information is derived from sources other than radar.

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 MARK− A beacon data block sent by the host computer to be displayed by the ARTS on a 360 degree bearing at a locally selected radar azimuth and distance. The North Mark is used to ensure correct range/azimuth orientation during periods of CENRAP.

NORTH PACIFIC− An organized route system between the Alaskan west coast and Japan.

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− 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.)

NOTICES TO AIRMEN PUBLICATION− A publication issued every 28 days, designed primarily for the pilot, which contains current NOTAM information considered essential to the safety of flight as well as supplemental data to other aeronautical publications. The contraction NTAP is used in NOTAM text.

(See NOTICE TO AIRMEN.)

NRR−

(See NON−RESTRICTIVE ROUTING.)

NRS−

(See NAVIGATION REFERENCE SYSTEM.)

NTAP−

(See NOTICES TO AIRMEN PUBLICATION.)

***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.)

# O

OBSTACLE− An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE DEPARTURE PROCEDURE (ODP)− A preplanned instrument flight rule (IFR) departure procedure printed for pilot use in textual or graphic form to provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See STANDARD INSTRUMENT DEPARTURES.)

(Refer to AIM.)

OBSTACLE FREE ZONE− The OFZ is a three dimensional volume of airspace which protects for the transition of aircraft to and from the runway. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible NAVAID locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized by air traffic control to enter the area using the provisions of FAAO JO 7110.65, Para 3−1−5, VEHICLES/EQUIPMENT/PERSONNEL ON RUNWAYS. The runway OFZ and when applicable, the inner-approach OFZ, and the inner-transitional OFZ, comprise the OFZ.

**a.** Runway OFZ. The runway OFZ is a defined volume of airspace centered above the runway. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway. The width is as follows:

**1.** For runways serving large airplanes, the greater of:

**(a)** 400 feet, or

**(b)** 180 feet, plus the wingspan of the most demanding airplane, plus 20 feet per 1,000 feet of airport elevation.

**2.** For runways serving only small airplanes:

**(a)** 300 feet for precision instrument runways.

**(b)** 250 feet for other runways serving small airplanes with approach speeds of 50 knots, or more.

**(c)** 120 feet for other runways serving small airplanes with approach speeds of less than 50 knots.

**b.** Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area. The inner-approach OFZ applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. The width of the inner-approach OFZ is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from the beginning.

**c.** Inner-transitional OFZ. The inner transitional surface OFZ is a defined volume of airspace along the sides of the runway and inner-approach OFZ and applies only to precision instrument runways. The inner-transitional surface OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the runway OFZ and inner-approach OFZ to a height of 150 feet above the established airport elevation.

(Refer to AC 150/5300-13, Chapter 3.)

(Refer to FAAO JO 7110.65, Para 3−1−5, VEHICLES/EQUIPMENT/PERSONNEL ON RUNWAYS.)

OBSTRUCTION− Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, Subpart C.

OBSTRUCTION LIGHT− A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

OCEANIC AIRSPACE− Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization are applied. Responsibility for the provisions of air traffic control service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.

OCEANIC ERROR REPORT− A report filed when ATC observes an Oceanic Error as defined by FAAO 7110.82, Reporting Oceanic Errors.

OCEANIC PUBLISHED ROUTE− A route established in international airspace and charted or described in flight information publications, such as Route Charts, DOD Enroute Charts, Chart Supplements, NOTAMs, and Track Messages.

OCEANIC TRANSITION ROUTE− An ATS route established for the purpose of transitioning aircraft to/from an organized track system.

ODP−
(See OBSTACLE DEPARTURE PROCEDURE.)

OFF COURSE− A term used to describe a situation where an aircraft has reported a position fix or is observed on radar at a point not on the ATC-approved route of flight.

OFF-ROUTE VECTOR− A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

OFFSET PARALLEL RUNWAYS− Staggered runways having centerlines which are parallel.

OFFSHORE/CONTROL AIRSPACE AREA− That portion of airspace between the U.S. 12 NM limit and the oceanic CTA/FIR boundary within which air traffic control is exercised. These areas are established to provide air traffic control services. Offshore/Control Airspace Areas may be classified as either Class A airspace or Class E airspace.

OFT−
(See OUTER FIX TIME.)

OM−
(See OUTER MARKER.)

*ON COURSE−*

**a.** Used to indicate that an aircraft is established on the route centerline.

**b.** Used by ATC to advise a pilot making a radar approach that his/her aircraft is lined up on the final approach course.
(See ON-COURSE INDICATION.)

ON-COURSE INDICATION− An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

ONE-MINUTE WEATHER− The most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWSS/AWOS.

ONER−
(See OCEANIC NAVIGATIONAL ERROR REPORT.)

OPERATIONAL−
(See DUE REGARD.)

OPERATIONS SPECIFICATIONS [ICAO]− The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

OPPOSITE DIRECTION AIRCRAFT− Aircraft are operating in opposite directions when:

**a.** They are following the same track in reciprocal directions; or

**b.** Their tracks are parallel and the aircraft are flying in reciprocal directions; or

**c.** Their tracks intersect at an angle of more than 135°.

OPTION APPROACH− An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing.
(See CLEARED FOR THE OPTION.)
(Refer to AIM.)

ORGANIZED TRACK SYSTEM− A series of ATS routes which are fixed and charted; i.e., CEP, NOPAC, or flexible and described by NOTAM; i.e., NAT TRACK MESSAGE.

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.

Note: The abbreviation "PAR" is also used to denote preferential arrival routes in ARTCC computers.

(See GLIDEPATH.)
(See PAR.)
(See PREFERENTIAL ROUTES.)
(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.

Note: Precision approach radars are designed to enable pilots of aircraft to be given guidance by radio communication during the final stages of the approach to land.

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 onboard 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.

PREFERENTIAL ROUTES− Preferential routes (PDRs, PARs, and PDARs) are adapted in ARTCC computers to accomplish inter/intrafacility controller coordination and to assure that flight data is posted at the proper control positions. Locations having a need for these specific inbound and outbound routes normally publish such routes in local facility bulletins, and their use by pilots minimizes flight plan route amendments. When the workload or traffic situation permits, controllers normally provide radar vectors or assign requested routes to minimize circuitous routing. Preferential routes are usually confined to one ARTCC's area and are referred to by the following names or acronyms:

**a.** Preferential Departure Route (PDR). A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an Instrument Departure Procedure (DP) or a Preferred IFR Route.

**b.** Preferential Arrival Route (PAR). A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route. The abbreviation "PAR" is used primarily within the ARTCC and should not be confused with the abbreviation for Precision Approach Radar.

**c.** Preferential Departure and Arrival Route (PDAR). A route between two terminals which are within or immediately adjacent to one ARTCC's area. PDARs are not synonymous with Preferred IFR Routes but may be listed as such as they do accomplish essentially the same purpose.

(See PREFERRED IFR ROUTES.)

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. 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 are correlated with DPs and STARs and may be defined by airways, jet routes, direct routes between NAVAIDs, Waypoints, NAVAID radials/ DME, or any combinations thereof.

(See CENTER'S AREA.)
(See INSTRUMENT DEPARTURE PROCEDURE.)
(See PREFERENTIAL ROUTES.)
(See STANDARD TERMINAL ARRIVAL.)
(Refer to CHART SUPPLEMENT U.S.)
(Refer to NOTICES TO AIRMEN PUBLICATION.)

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 ILS PRM APPROACH and PRECISION RUNWAY MONITOR SYSTEM.)

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

# R

RADAR− A device which, by measuring the time interval between transmission and reception of radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation, provides information on range, azimuth, and/or elevation of objects in the path of the transmitted pulses.

**a.** Primary Radar− A radar system in which a minute portion of a radio pulse transmitted from a site is reflected by an object and then received back at that site for processing and display at an air traffic control facility.

**b.** Secondary Radar/Radar Beacon (ATCRBS)− A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radar pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This reply transmission, rather than a reflected signal, is then received back at the transmitter/receiver site for processing and display at an air traffic control facility.

(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

RADAR [ICAO]− A radio detection device which provides information on range, azimuth and/or elevation of objects.

**a.** Primary Radar− Radar system which uses reflected radio signals.

**b.** Secondary Radar− Radar system wherein a radio signal transmitted from a radar station initiates the transmission of a radio signal from another station.

RADAR ADVISORY− The provision of advice and information based on radar observations.

(See ADVISORY SERVICE.)

RADAR ALTIMETER−

(See RADIO ALTIMETER.)

RADAR APPROACH− An instrument approach procedure which utilizes Precision Approach Radar (PAR) or Airport Surveillance Radar (ASR).

(See AIRPORT SURVEILLANCE RADAR.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See PRECISION APPROACH RADAR.)
(See SURVEILLANCE APPROACH.)
(See ICAO term RADAR APPROACH.)
(Refer to AIM.)

RADAR APPROACH [ICAO]− An approach, executed by an aircraft, under the direction of a radar controller.

RADAR APPROACH CONTROL FACILITY− A terminal ATC facility that uses radar and nonradar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility.

(See APPROACH CONTROL SERVICE.)

**a.** Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/or military airports in a terminal area. The facility may provide services of a ground controlled approach (GCA); i.e., ASR and PAR approaches. A radar approach control facility may be operated by FAA, USAF, US Army, USN, USMC, or jointly by FAA and a military service. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

**1.** Army Radar Approach Control (ARAC) (Army).

**2.** Radar Air Traffic Control Facility (RATCF) (Navy/FAA).

**3.** Radar Approach Control (RAPCON) (Air Force/FAA).

**4.** Terminal Radar Approach Control (TRACON) (FAA).

**5.** Air Traffic Control Tower (ATCT) (FAA). (Only those towers delegated approach control authority.)

RADAR ARRIVAL− An aircraft arriving at an airport served by a radar facility and in radar contact with the facility.

(See NONRADAR.)

RADAR BEACON−
(See RADAR.)

RADAR CLUTTER [ICAO]− The visual indication on a radar display of unwanted signals.

***RADAR CONTACT−***

**a.** Used by ATC to inform an aircraft that it is identified using an approved ATC surveillance source on an air traffic controller's display and that radar flight following will be provided until radar service is terminated. Radar service may also be provided within the limits of necessity and capability. When a pilot is informed of "radar contact," he/she automatically discontinues reporting over compulsory reporting points.
(See ATC SURVEILLANCE SOURCE.)
(See RADAR CONTACT LOST.)
(See RADAR FLIGHT FOLLOWING.)
(See RADAR SERVICE.)
(See RADAR SERVICE TERMINATED.)
(Refer to AIM.)

**b.** The term used to inform the controller that the aircraft is identified and approval is granted for the aircraft to enter the receiving controllers airspace.
(See ICAO term RADAR CONTACT.)

RADAR CONTACT [ICAO]− The situation which exists when the radar blip or radar position symbol of a particular aircraft is seen and identified on a radar display.

***RADAR CONTACT LOST−*** Used by ATC to inform a pilot that the surveillance data used to determine the aircraft's position is no longer being received, or is no longer reliable and radar service is no longer being provided. The loss may be attributed to several factors including the aircraft merging with weather or ground clutter, the aircraft operating below radar line of sight coverage, the aircraft entering an area of poor radar return, failure of the aircraft's equipment, or failure of the surveillance equipment.
(See CLUTTER.)
(See RADAR CONTACT.)

RADAR ENVIRONMENT− An area in which radar service may be provided.
(See ADDITIONAL SERVICES.)
(See RADAR CONTACT.)
(See RADAR SERVICE.)
(See TRAFFIC ADVISORIES.)

RADAR FLIGHT FOLLOWING− The observation of the progress of radar identified aircraft, whose primary navigation is being provided by the pilot, wherein the controller retains and correlates the aircraft identity with the appropriate target or target symbol displayed on the radar scope.
(See RADAR CONTACT.)
(See RADAR SERVICE.)
(Refer to AIM.)

RADAR IDENTIFICATION− The process of ascertaining that an observed radar target is the radar return from a particular aircraft.
(See RADAR CONTACT.)
(See RADAR SERVICE.)
(See ICAO term RADAR IDENTIFICATION.)

RADAR IDENTIFICATION [ICAO]− The process of correlating a particular radar blip or radar position symbol with a specific aircraft.

RADAR IDENTIFIED AIRCRAFT− An aircraft, the position of which has been correlated with an observed target or symbol on the radar display.
(See RADAR CONTACT.)
(See RADAR CONTACT LOST.)

RADAR MONITORING−
(See RADAR SERVICE.)

RADAR NAVIGATIONAL GUIDANCE−
(See RADAR SERVICE.)

RADAR POINT OUT− An action taken by a controller to transfer the radar identification of an aircraft to another controller if the aircraft will or may enter the airspace or protected airspace of another controller and radio communications will not be transferred.

RADAR REQUIRED− A term displayed on charts and approach plates and included in FDC NOTAMs to alert pilots that segments of either an instrument approach procedure or a route are not navigable because of either the absence or unusability of a NAVAID. The pilot can expect to be provided radar navigational guidance while transiting segments labeled with this term.
(See RADAR ROUTE.)
(See RADAR SERVICE.)

RADAR ROUTE− A flight path or route over which an aircraft is vectored. Navigational guidance and altitude assignments are provided by ATC.
(See FLIGHT PATH.)
(See ROUTE.)

RADAR SEPARATION−
(See RADAR SERVICE.)

RADAR SERVICE− A term which encompasses one or more of the following services based on the use of radar which can be provided by a controller to a pilot of a radar identified aircraft.

**a.** Radar Monitoring− The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS,RNAV and GLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS RNAV and GLS no transgression zone.
(See ADDITIONAL SERVICES.)
(See TRAFFIC ADVISORIES.)

**b.** Radar Navigational Guidance− Vectoring aircraft to provide course guidance.

**c.** Radar Separation− Radar spacing of aircraft in accordance with established minima.
(See ICAO term RADAR SERVICE.)

RADAR SERVICE [ICAO]− Term used to indicate a service provided directly by means of radar.

**a.** Monitoring− The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path.

**b.** Separation− The separation used when aircraft position information is derived from radar sources.

***RADAR SERVICE TERMINATED−*** Used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact. Radar service is automatically terminated, and the pilot is not advised in the following cases:

**a.** An aircraft cancels its IFR flight plan, except within Class B airspace, Class C airspace, a TRSA, or where Basic Radar service is provided.

**b.** An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.

**c.** An arriving VFR aircraft, receiving radar service to a tower-controlled airport within Class B airspace, Class C airspace, a TRSA, or where sequencing service is provided, has landed; or to all other airports, is instructed to change to tower or advisory frequency.

**d.** An aircraft completes a radar approach.

RADAR SURVEILLANCE− The radar observation of a given geographical area for the purpose of performing some radar function.

RADAR TRAFFIC ADVISORIES− Advisories issued to alert pilots to known or observed radar traffic which may affect the intended route of flight of their aircraft.
(See TRAFFIC ADVISORIES.)

RADAR TRAFFIC INFORMATION SERVICE−
(See TRAFFIC ADVISORIES.)

RADAR VECTORING [ICAO]− Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

RADIAL− A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

RADIO−

**a.** A device used for communication.

**b.** Used to refer to a flight service station; e.g., "Seattle Radio" is used to call Seattle FSS.

RADIO ALTIMETER− Aircraft equipment which makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

RADIO BEACON−
(See NONDIRECTIONAL BEACON.)

RADIO DETECTION AND RANGING−
(See RADAR.)

RADIO MAGNETIC INDICATOR− An aircraft navigational instrument coupled with a gyro compass or similar compass that indicates the direction of a selected NAVAID and indicates bearing with respect to the heading of the aircraft.

RAIS−
(See REMOTE AIRPORT INFORMATION SERVICE.)

RAMP−
(See APRON.)

RANDOM ALTITUDE− An altitude inappropriate for direction of flight and/or not in accordance with FAAO JO 7110.65, Para 4−5−1, VERTICAL SEPARATION MINIMA.

RANDOM ROUTE– Any route not established or charted/published or not otherwise available to all users.

RC–
(See ROAD RECONNAISSANCE.)

RCAG–
(See REMOTE COMMUNICATIONS AIR/GROUND FACILITY.)

RCC–
(See RESCUE COORDINATION CENTER.)

RCO–
(See REMOTE COMMUNICATIONS OUTLET.)

RCR–
(See RUNWAY CONDITION READING.)

***READ BACK–*** Repeat my message back to me.

RECEIVER AUTONOMOUS INTEGRITY MONITORING (RAIM)– A technique whereby a civil GNSS receiver/processor determines the integrity of the GNSS navigation signals without reference to sensors or non-DoD integrity systems other than the receiver itself. This determination is achieved by a consistency check among redundant pseudorange measurements.

RECEIVING CONTROLLER– A controller/facility receiving control of an aircraft from another controller/facility.

RECEIVING FACILITY–
(See RECEIVING CONTROLLER.)

RECONFORMANCE– The automated process of bringing an aircraft's Current Plan Trajectory into conformance with its track.

***REDUCE SPEED TO (SPEED)–***
(See SPEED ADJUSTMENT.)

REIL–
(See RUNWAY END IDENTIFIER LIGHTS.)

RELEASE TIME– A departure time restriction issued to a pilot by ATC (either directly or through an authorized relay) when necessary to separate a departing aircraft from other traffic.
(See ICAO term RELEASE TIME.)

RELEASE TIME [ICAO]– Time prior to which an aircraft should be given further clearance or prior to which it should not proceed in case of radio failure.

REMOTE AIRPORT INFORMATION SERVICE (RAIS)– A temporary service provided by facilities, which are not located on the landing airport, but have communication capability and automated weather reporting available to the pilot at the landing airport.

REMOTE COMMUNICATIONS AIR/GROUND FACILITY– An unmanned VHF/UHF transmitter/receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz.
(Refer to AIM.)

REMOTE COMMUNICATIONS OUTLET– An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs. RTRs serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCOs and RTRs. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.

REMOTE TRANSMITTER/RECEIVER–
(See REMOTE COMMUNICATIONS OUTLET.)

***REPORT–*** Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

REPORTING POINT– A geographical location in relation to which the position of an aircraft is reported.
(See COMPULSORY REPORTING POINTS.)
(See ICAO term REPORTING POINT.)
(Refer to AIM.)

REPORTING POINT [ICAO]– A specified geographical location in relation to which the position of an aircraft can be reported.

***REQUEST FULL ROUTE CLEARANCE−*** Used by pilots to request that the entire route of flight be read verbatim in an ATC clearance. Such request should be made to preclude receiving an ATC clearance based on the original filed flight plan when a filed IFR flight plan has been revised by the pilot, company, or operations prior to departure.

REQUIRED NAVIGATION PERFORMANCE (RNP)– A statement of the navigational performance necessary for operation within a defined airspace. The following terms are commonly associated with RNP:

**a.** Required Navigation Performance Level or Type (RNP-X). A value, in nautical miles (NM), from the intended horizontal position within which an aircraft would be at least 95-percent of the total flying time.

**b.** 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.

**c.** Actual Navigation Performance (ANP). A measure of the current estimated navigational performance. Also referred to as Estimated Position Error (EPE).

**d.** Estimated Position Error (EPE). A measure of the current estimated navigational performance. Also referred to as Actual Navigation Performance (ANP).

**e.** Lateral Navigation (LNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides lateral guidance to a profile or path.

**f.** Vertical Navigation (VNAV). A function of area navigation (RNAV) equipment which calculates, displays, and provides vertical guidance to a profile or path.

RESCUE COORDINATION CENTER− 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 systems (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, which 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.

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.)

ROAD RECONNAISSANCE− 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.)

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 a PAR/PDR/PDAR has been applied to the flight plan.
(See ATC PREFERRED ROUTE NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL)

ROUTE SEGMENT− As used in Air Traffic Control, a part of a route that can be defined by two navigational fixes, two NAVAIDs, or a fix and a NAVAID.
(See FIX.)
(See ROUTE.)
(See ICAO term ROUTE SEGMENT.)

ROUTE SEGMENT [ICAO]− A portion of a route to be flown, as defined by two consecutive significant points specified in a flight plan.

RSA−
(See RUNWAY SAFETY AREA.)

RTR−
(See REMOTE TRANSMITTER/RECEIVER.)

RUNWAY− A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 1, Runway 25.
(See PARALLEL RUNWAYS.)
(See ICAO term RUNWAY.)

RUNWAY [ICAO]− A defined rectangular area on a land aerodrome prepared for the landing and take-off of aircraft.

RUNWAY CENTERLINE LIGHTING−
(See AIRPORT LIGHTING.)

RUNWAY CONDITION READING− Numerical decelerometer readings relayed by air traffic controllers at USAF and certain civil bases for use by the pilot in determining runway braking action. These readings are routinely relayed only to USAF and Air National Guard Aircraft.
(See BRAKING ACTION.)

RUNWAY END IDENTIFIER LIGHTS−
(See AIRPORT LIGHTING.)

RUNWAY ENTRANCE LIGHTS (REL)—An array of red lights which include the first light at the hold line followed by a series of evenly spaced lights to the runway edge aligned with the taxiway centerline, and one additional light at the runway centerline in line with the last two lights before the runway edge.

RUNWAY GRADIENT− The average slope, measured in percent, between two ends or points on a runway. Runway gradient is depicted on Government aerodrome sketches when total runway gradient exceeds 0.3%.

***RUNWAY HEADING−*** The magnetic direction that corresponds with the runway centerline extended, not the painted runway number. When cleared to "fly or maintain runway heading," pilots are expected to fly or maintain the heading that corresponds with the extended centerline of the departure runway. Drift correction shall not be applied; e.g., Runway 4, actual magnetic heading of the runway centerline 044, fly 044.

RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY− Any runway or runways currently being used for takeoff or landing. When multiple runways are used, they are all considered active runways. In the metering sense, a selectable adapted item which specifies the landing runway configuration or direction of traffic flow. The adapted optimum flight plan from each transition fix to the vertex is determined by the runway configuration for arrival metering processing purposes.

RUNWAY LIGHTS−
(See AIRPORT LIGHTING.)

RUNWAY MARKINGS−
(See AIRPORT MARKING AIDS.)

RUNWAY OVERRUN− In military aviation exclusively, a stabilized or paved area beyond the end of a runway, of the same width as the runway plus shoulders, centered on the extended runway centerline.

RUNWAY PROFILE DESCENT− An instrument flight rules (IFR) air traffic control arrival procedure to a runway published for pilot use in graphic and/or textual form and may be associated with a STAR. Runway Profile Descents provide routing and may depict crossing altitudes, speed restrictions, and headings to be flown from the en route structure to the point where the pilot will receive clearance for and execute an instrument approach procedure. A Runway Profile Descent may apply to more than one runway if so stated on the chart.
(Refer to AIM.)

RUNWAY SAFETY AREA− A defined surface surrounding the runway prepared, or suitable, for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The dimensions of the RSA vary and can be determined by using the criteria contained within AC 150/5300-13, Airport Design, Chapter 3. Figure 3−1 in AC 150/5300-13 depicts the RSA. The design standards dictate that the RSA shall be:

**a.** Cleared, graded, and have no potentially hazardous ruts, humps, depressions, or other surface variations;

**b.** Drained by grading or storm sewers to prevent water accumulation;

**c.** Capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and,

**d.** Free of objects, except for objects that need to be located in the runway safety area because of their function. These objects shall be constructed on low impact resistant supports (frangible mounted structures) to the lowest practical height with the frangible point no higher than 3 inches above grade.
(Refer to AC 150/5300-13, Airport Design, Chapter 3.)

RUNWAY STATUS LIGHTS (RWSL) SYSTEM—The RWSL is a system of runway and taxiway lighting to provide pilots increased situational awareness by illuminating runway entry lights (REL) when the runway is unsafe for entry or crossing, and take-off hold lights (THL) when the runway is unsafe for departure.

RUNWAY TRANSITION−

**a.** Conventional STARs/SIDs. The portion of a STAR/SID that serves a particular runway or runways at an airport.

**b.** RNAV STARs/SIDs. Defines a path(s) from the common route to the final point(s) on a STAR. For a SID, the common route that serves a particular runway or runways at an airport.

RUNWAY USE PROGRAM− A noise abatement runway selection plan designed to enhance noise abatement efforts with regard to airport communities for arriving and departing aircraft. These plans are developed into runway use programs and apply to all turbojet aircraft 12,500 pounds or heavier; turbojet aircraft less than 12,500 pounds are included only if the airport proprietor determines that the aircraft creates a noise problem. Runway use programs are coordinated with FAA offices, and safety criteria used in these programs are developed by the Office of Flight Operations. Runway use programs are administered by the Air Traffic Service as "Formal" or "Informal" programs.

**a.** Formal Runway Use Program− An approved noise abatement program which is defined and acknowledged in a Letter of Understanding between Flight Operations, Air Traffic Service, the airport proprietor, and the users. Once established, participation in the program is mandatory for aircraft operators and pilots as provided for in 14 CFR Section 91.129.

**b.** Informal Runway Use Program− An approved noise abatement program which does not require a Letter of Understanding, and participation in the program is voluntary for aircraft operators/pilots.

RUNWAY VISIBILITY VALUE−
(See VISIBILITY.)

RUNWAY VISUAL RANGE−
(See VISIBILITY.)

# S

SAA−
(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 ASDE−3X, 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 ASDE−3X is an integral part of the software program.

SAFETY LOGIC SYSTEM ALERTS−

**a.** ALERT− An actual situation involving two real safety logic tracks (aircraft/aircraft, aircraft/vehicle, or aircraft/other tangible object) that safety logic has predicted will result in an imminent collision, based upon the current set of Safety Logic parameters.

**b.** FALSE ALERT−

**1.** Alerts generated by one or more false surface−radar targets that the system has interpreted as real tracks and placed into safety logic.

**2.** Alerts in which the safety logic software did not perform correctly, based upon the design specifications and the current set of Safety Logic parameters.

**3.** The alert is 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 secondary radar 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 (for example, helicopter, pipeline patrol, non−Mode C overflight, etc.).

**d.** VALID NON−ALERT− A situation in which the safety logic software correctly determines that an alert is not required, based upon the design specifications and the current set of Safety Logic parameters.

**e.** INVALID NON−ALERT− A situation in which the safety logic software did not issue an alert when an alert was required, based upon the design specifications.

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.)

***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.

SDF−
(See SIMPLIFIED DIRECTIONAL FACILITY.)

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 cancelled.

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 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 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.)

SLOT TIME−

(See METER FIX TIME/SLOT TIME.)

SLOW TAXI− To taxi a float plane at low power or low RPM.

SN−

(See SYSTEM STRATEGIC NAVIGATION.)

***SPEAK SLOWER−*** Used in verbal communications as a request to reduce speech rate.

SPECIAL ACTIVITY AIRSPACE (SAA)− Any airspace with defined dimensions within the National Airspace System wherein limitations may be imposed upon aircraft operations. This airspace may be restricted areas, prohibited areas, military operations areas, air ATC assigned airspace, and any other designated airspace areas. The dimensions of this airspace are programmed into EDST and can be designated as either active or inactive by screen entry. Aircraft trajectories are constantly tested against the dimensions of active areas and alerts issued to the applicable sectors when violations are predicted.

(See EN ROUTE DECISION SUPPORT TOOL.)

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 INSTRUMENT APPROACH PROCEDURE−

(See INSTRUMENT APPROACH PROCEDURE.)

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)− A MOA is 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.

(Refer to AIM.)

**d.** 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.)

**e.** Restricted Area− 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. Restricted areas are depicted on en route charts. Where joint use is authorized, the name of the ATC controlling facility is also shown.

(Refer to 14 CFR Part 73.)
(Refer to AIM.)

**f.** 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 metrological 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.)

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 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.

***SQUAWK (Mode, Code, Function)***− Activate specific modes/codes/functions on the aircraft transponder; e.g., "Squawk three/alpha, two one zero five, low."

(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− 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 RESERVATIONS− Altitude reservations which encompass activities in a fixed area. Stationary 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.

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.

STOL AIRCRAFT−
(See SHORT TAKEOFF AND LANDING AIRCRAFT.)

***STOP ALTITUDE SQUAWK−*** Used by ATC to inform an aircraft to turn-off the automatic altitude reporting feature of its transponder. It is issued when the verbally reported altitude varies 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 tell the pilot to turn specified functions of the aircraft transponder off.
(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.

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.

SURPIC− A description of surface vessels in the area of a Search and Rescue incident including their predicted positions and their characteristics.

(Refer to FAAO 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.)

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.

radio frequency and also, for subscribers, in a text message via data link to the cockpit or to a gate printer. TDLS also provides Pre−departure Clearances (PDC), at selected airports, to subscribers, through a service provider, in text to the cockpit or to a gate printer. In addition, TDLS will emulate the Flight Data Input/Output (FDIO) information within the control tower.

TERMINAL RADAR SERVICE AREA− Airspace surrounding designated airports wherein ATC provides radar vectoring, sequencing, and separation on a full-time basis for all IFR and participating VFR aircraft. The AIM contains an explanation of TRSA. TRSAs are depicted on VFR aeronautical charts. Pilot participation is urged but is not mandatory.

TERMINAL VFR RADAR SERVICE− A national program instituted to extend the terminal radar services provided instrument flight rules (IFR) aircraft to visual flight rules (VFR) aircraft. The program is divided into four types service referred to as basic radar service, terminal radar service area (TRSA) service, Class B service and Class C service. The type of service provided at a particular location is contained in the Chart Supplement U.S.

**a.** Basic Radar Service− These services are provided for VFR aircraft by all commissioned terminal radar facilities. Basic radar service includes safety alerts, traffic advisories, limited radar vectoring when requested by the pilot, and sequencing at locations where procedures have been established for this purpose and/or when covered by a letter of agreement. The purpose of this service is to adjust the flow of arriving IFR and VFR aircraft into the traffic pattern in a safe and orderly manner and to provide traffic advisories to departing VFR aircraft.

**b.** TRSA Service− This service provides, in addition to basic radar service, sequencing of all IFR and participating VFR aircraft to the primary airport and separation between all participating VFR aircraft. The purpose of this service is to provide separation between all participating VFR aircraft and all IFR aircraft operating within the area defined as a TRSA.

**c.** Class C Service− This service provides, in addition to basic radar service, approved separation between IFR and VFR aircraft, and sequencing of VFR aircraft, and sequencing of VFR arrivals to the primary airport.

**d.** Class B Service− This service provides, in addition to basic radar service, approved separation of aircraft based on IFR, VFR, and/or weight, and sequencing of VFR arrivals to the primary airport(s).

(See CONTROLLED AIRSPACE.)
(See TERMINAL RADAR SERVICE AREA.)
(Refer to AIM.)
(Refer to CHART SUPPLEMENT U.S.)

TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION− A very high frequency terminal omnirange station located on or near an airport and used as an approach aid.

(See NAVIGATIONAL AID.)
(See VOR.)

TERRAIN AWARENESS WARNING SYSTEM (TAWS)− An on−board, terrain proximity alerting system providing the aircrew 'Low Altitude warnings' to allow immediate pilot action.

TERRAIN FOLLOWING− The flight of a military aircraft maintaining a constant AGL altitude above the terrain or the highest obstruction. The altitude of the aircraft will constantly change with the varying terrain and/or obstruction.

TETRAHEDRON− A device normally located on uncontrolled airports and used as a landing direction indicator. The small end of a tetrahedron points in the direction of landing. At controlled airports, the tetrahedron, if installed, should be disregarded because tower instructions supersede the indicator.

(See SEGMENTED CIRCLE.)
(Refer to AIM.)

TF−

(See TERRAIN FOLLOWING.)

***THAT IS CORRECT−*** The understanding you have is right.

THREE−HOUR TARMAC RULE− Rule that relates to Department of Transportation (DOT) requirements placed on airlines when tarmac delays are anticipated to reach 3 hours.

360 OVERHEAD−

(See OVERHEAD MANEUVER.)

THRESHOLD− The beginning of that portion of the runway usable for landing.

(See AIRPORT LIGHTING.)
(See DISPLACED THRESHOLD.)

THRESHOLD CROSSING HEIGHT− The theoretical height above the runway threshold at which the aircraft's glideslope antenna would be if the aircraft maintains the trajectory established by the mean ILS glideslope or the altitude at which the calculated glidepath of an RNAV or GPS approaches.

(See GLIDESLOPE.)
(See THRESHOLD.)

THRESHOLD LIGHTS−
(See AIRPORT LIGHTING.)

TIBS−
(See TELEPHONE INFORMATION BRIEFING SERVICE.)

TIE-IN FACILITY− The FSS primarily responsible for providing FSS services, including telecommunications services for landing facilities or navigational aids located within the boundaries of a flight plan area (FPA). Three-letter identifiers are assigned to each FSS/FPA and are annotated as tie-in facilities in the Chart Supplement U.S., the Alaska Supplement, the Pacific Supplement, and FAA Order JO 7350.8, Location Identifiers. Large consolidated FSS facilities may have many tie-in facilities or FSS sectors within one facility.

(See FLIGHT PLAN AREA.)
(See FLIGHT SERVICE STATION.)

TIME BASED FLOW MANAGEMENT (TBFM)− The hardware, software, methods, processes, and initiatives to manage air traffic flows based on time to balance air traffic demand with system capacity, and support the management of PBN. This includes, but not limited to, Adjacent Center Metering (ACM). En Route Departure Capability (EDC), Ground-Interval Management-Spacing (GIM-S), Integrated Departure/Arrival Capability (IDAC), Single Center Metering (SCM), Time-Based Metering (TBM), Time-Based Scheduling (TBS), and Extended/Coupled Metering.

TIME GROUP− Four digits representing the hour and minutes from the Coordinated Universal Time (UTC) clock. FAA uses UTC for all operations. The term "ZULU" may be used to denote UTC. The word "local" or the time zone equivalent shall be used to denote local when local time is given during radio and telephone communications. When written, a time zone designator is used to indicate local time; e.g. "0205M" (Mountain). The local time may be based on the 24-hour clock system. The day begins at 0000 and ends at 2359.

TIS−B−
(See TRAFFIC INFORMATION SERVICE−BROADCAST.)

TMPA−
(See TRAFFIC MANAGEMENT PROGRAM ALERT.)

TMU−
(See TRAFFIC MANAGEMENT UNIT.)

TODA−
(See TAKEOFF DISTANCE AVAILABLE.)
(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TOI−
(See TRACK OF INTEREST.)

TOP ALTITUDE− In reference to SID published altitude restrictions the charted "maintain" altitude contained in the procedure description or assigned by ATC.

TORA−
(See TAKEOFF RUN AVAILABLE.)
(See ICAO term TAKEOFF RUN AVAILABLE.)

TORCHING− The burning of fuel at the end of an exhaust pipe or stack of a reciprocating aircraft engine, the result of an excessive richness in the fuel air mixture.

TOS−
(See TRAJECTORY OPTIONS SET)

TOTAL ESTIMATED ELAPSED TIME [ICAO]− For IFR flights, the estimated time required from take-off to arrive over that designated point, defined by reference to navigation aids, from which it is intended that an instrument approach procedure will be commenced, or, if no navigation aid is associated with the destination aerodrome, to arrive over the destination aerodrome. For VFR flights, the estimated time required from take-off to arrive over the destination aerodrome.

(See ICAO term ESTIMATED ELAPSED TIME.)

TOUCH-AND-GO− An operation by an aircraft that lands and departs on a runway without stopping or exiting the runway.

TOUCH-AND-GO LANDING−
(See TOUCH-AND-GO.)

TOUCHDOWN−

**a.** The point at which an aircraft first makes contact with the landing surface.

**b.** Concerning a precision radar approach (PAR), it is the point where the glide path intercepts the landing surface.

(See ICAO term TOUCHDOWN.)

TOUCHDOWN [ICAO]− The point where the nominal glide path intercepts the runway.

Note: Touchdown as defined above is only a datum and is not necessarily the actual point at which the aircraft will touch the runway.

TOUCHDOWN RVR−

(See VISIBILITY.)

TOUCHDOWN ZONE− The first 3,000 feet of the runway beginning at the threshold. The area is used for determination of Touchdown Zone Elevation in the development of straight-in landing minimums for instrument approaches.

(See ICAO term TOUCHDOWN ZONE.)

TOUCHDOWN ZONE [ICAO]− The portion of a runway, beyond the threshold, where it is intended landing aircraft first contact the runway.

TOUCHDOWN ZONE ELEVATION− The highest elevation in the first 3,000 feet of the landing surface. TDZE is indicated on the instrument approach procedure chart when straight-in landing minimums are authorized.

(See TOUCHDOWN ZONE.)

TOUCHDOWN ZONE LIGHTING−

(See AIRPORT LIGHTING.)

TOWER− A terminal facility that uses air/ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area. Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace area regardless of flight plan or weather conditions (IFR or VFR). A tower may also provide approach control services (radar or nonradar).

(See AIRPORT TRAFFIC CONTROL SERVICE.)
(See APPROACH CONTROL FACILITY.)
(See APPROACH CONTROL SERVICE.)
(See MOVEMENT AREA.)
(See TOWER EN ROUTE CONTROL SERVICE.)
(See ICAO term AERODROME CONTROL TOWER.)
(Refer to AIM.)

TOWER EN ROUTE CONTROL SERVICE− The control of IFR en route traffic within delegated airspace between two or more adjacent approach control facilities. This service is designed to expedite traffic and reduce control and pilot communication requirements.

TOWER TO TOWER−

(See TOWER EN ROUTE CONTROL SERVICE.)

TRACEABLE PRESSURE STANDARD− The facility station pressure instrument, with certification/calibration traceable to the National Institute of Standards and Technology. Traceable pressure standards may be mercurial barometers, commissioned ASOS/AWSS or dual transducer AWOS, or portable pressure standards or DASI.

TRACK− The actual flight path of an aircraft over the surface of the earth.

(See COURSE.)
(See FLIGHT PATH.)
(See ROUTE.)
(See ICAO term TRACK.)

TRACK [ICAO]− The projection on the earth's surface of the path of an aircraft, the direction of which path at any point is usually expressed in degrees from North (True, Magnetic, or Grid).

TRACK OF INTEREST (TOI)− Displayed data representing an airborne object that threatens or has the potential to threaten North America or National Security. Indicators may include, but are not limited to: noncompliance with air traffic control instructions or aviation regulations; extended loss of communications; unusual transmissions or unusual flight behavior; unauthorized intrusion into controlled airspace or an ADIZ; noncompliance with issued flight restrictions/security procedures; or unlawful interference with airborne flight crews, up to and including hijack. In certain circumstances, an object may become a TOI based on specific and credible intelligence pertaining to that particular aircraft/object, its passengers, or its cargo.

TRACK OF INTEREST RESOLUTION− A TOI will normally be considered resolved when: the aircraft/object is no longer airborne; the aircraft complies with air traffic control instructions, aviation regulations, and/or issued flight restrictions/security procedures; radio contact is re−established and authorized control of the aircraft is verified; the aircraft is intercepted and intent is verified to be nonthreatening/nonhostile; TOI was identified based on specific and credible intelligence that was later determined to be invalid or unreliable; or displayed data is identified and characterized as invalid.

TRAFFIC−

**a.** A term used by a controller to transfer radar identification of an aircraft to another controller for the purpose of coordinating separation action. Traffic is normally issued:

**1.** In response to a handoff or point out,

**2.** In anticipation of a handoff or point out, or

**3.** In conjunction with a request for control of an aircraft.

**b.** A term used by ATC to refer to one or more aircraft.

TRAFFIC ADVISORIES− Advisories issued to alert pilots to other known or observed air traffic which may be in such proximity to the position or intended route of flight of their aircraft to warrant their attention. Such advisories may be based on:

**a.** Visual observation.

**b.** Observation of radar identified and nonidentified aircraft targets on an ATC radar display, or

**c.** Verbal reports from pilots or other facilities.

Note 1: The word "traffic" followed by additional information, if known, is used to provide such advisories; e.g., "Traffic, 2 o'clock, one zero miles, southbound, eight thousand."

Note 2: Traffic advisory service will be provided to the extent possible depending on higher priority duties of the controller or other limitations; e.g., radar limitations, volume of traffic, frequency congestion, or controller workload. Radar/nonradar traffic advisories do not relieve the pilot of his/her responsibility to see and avoid other aircraft. Pilots are cautioned that there are many times when the controller is not able to give traffic advisories concerning all traffic in the aircraft's proximity; in other words, when a pilot requests or is receiving traffic advisories, he/she should not assume that all traffic will be issued.

(Refer to AIM.)

***TRAFFIC ALERT (aircraft call sign), TURN (left/right) IMMEDIATELY, (climb/descend) AND MAINTAIN (altitude).***

(See SAFETY ALERT.)

TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM− An airborne collision avoidance system based on radar beacon signals which operates independent of ground-based equipment. TCAS-I generates traffic advisories only. TCAS-II generates traffic advisories, and resolution (collision avoidance) advisories in the vertical plane.

TRAFFIC INFORMATION−

(See TRAFFIC ADVISORIES.)

TRAFFIC INFORMATION SERVICE− BROADCAST (TIS−B)− The broadcast of ATC derived traffic information to ADS−B equipped (1090ES or UAT) aircraft. The source of this traffic information is derived from 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 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 either the Notices to Airmen publication or 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 upwind leg, crosswind leg, downwind leg, base leg, and final approach.

**a.** Upwind Leg− A flight path parallel to the landing runway in the direction of landing.

**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.

**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.

(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 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.

TRANSCRIBED WEATHER BROADCAST− A continuous recording of meteorological and aeronautical information that is broadcast on L/MF and VOR facilities for pilots. (Provided only in Alaska.)

(Refer to AIM.)

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−

**a.** 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.

**b.** A published procedure (DP Transition) used to connect the basic DP to one of several en route airways/jet routes, or a published procedure (STAR

Transition) used to connect one of several en route airways/jet routes to the basic STAR.
(Refer to DP/STAR Charts.)

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.

TRANSITION WAYPOINT− The waypoint that defines the beginning of a runway or en route transition on an RNAV SID or STAR.

TRANSITIONAL AIRSPACE− That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

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) and runway visibility value (RVV).
(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.)

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.

TURN ANTICIPATION− (maneuver anticipation).

TVOR−
(See TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION.)

TWEB−
(See TRANSCRIBED WEATHER BROADCAST.)

TWO-WAY RADIO COMMUNICATIONS FAILURE−
(See LOST COMMUNICATIONS.)

# U

UHF−
(See ULTRAHIGH FREQUENCY.)

ULTRAHIGH FREQUENCY− The frequency band between 300 and 3,000 MHz. The bank of radio frequencies used for military air/ground voice communications. In some instances this may go as low as 225 MHz and still be referred to as UHF.

ULTRALIGHT VEHICLE− A single-occupant aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, nor pilot certification. Operation of an ultralight vehicle in certain airspace requires authorization from ATC
(Refer to 14 CFR Part 103.)

***UNABLE***− Indicates inability to comply with a specific instruction, request, or clearance.

UNASSOCIATED− A radar target that does not display a data block with flight identification and altitude information.
(See ASSOCIATED.)

UNDER THE HOOD− Indicates that the pilot is using a hood to restrict visibility outside the cockpit while simulating instrument flight. An appropriately rated pilot is required in the other control seat while this operation is being conducted.
(Refer to 14 CFR Part 91.)

UNFROZEN− The Scheduled Time of Arrival (STA) tags, which are still being rescheduled by the time based flow management (TBFM) calculations. The aircraft will remain unfrozen until the time the corresponding estimated time of arrival (ETA) tag passes the preset freeze horizon for that aircraft's stream class. At this point the automatic rescheduling will stop, and the STA becomes "frozen."

UNICOM− A nongovernment communication facility which may provide airport information at certain airports. Locations and frequencies of UNICOMs are shown on aeronautical charts and publications.
(See CHART SUPPLEMENT U.S.)
(Refer to AIM.)

UNMANNED AIRCRAFT (UA) - A device used or intended to be used for flight that has no onboard pilot. This device can be any type of airplane, helicopter, airship, or powered-lift aircraft. Unmanned free balloons, moored balloons, tethered aircraft, gliders, and unmanned rockets are not considered to be a UA.

UNMANNED AIRCRAFT SYSTEM (UAS)- An unmanned aircraft and its associated elements related to safe operations, which may include control stations (ground, ship, or air based), control links, support equipment, payloads, flight termination systems, and launch/recovery equipment. It consists of three elements: unmanned aircraft, control station, and data link.

UNPUBLISHED ROUTE− A route for which no minimum altitude is published or charted for pilot use. It may include a direct route between NAVAIDs, a radial, a radar vector, or a final approach course beyond the segments of an instrument approach procedure.
(See PUBLISHED ROUTE.)
(See ROUTE.)

UNRELIABLE (GPS/WAAS)− An advisory to pilots indicating the expected level of service of the GPS and/or WAAS may not be available. Pilots must then determine the adequacy of the signal for desired use.

UPWIND LEG−
(See TRAFFIC PATTERN.)

URGENCY− A condition of being concerned about safety and of requiring timely but not immediate assistance; a potential distress condition.
(See ICAO term URGENCY.)

URGENCY [ICAO]− A condition concerning the safety of an aircraft or other vehicle, or of person on board or in sight, but which does not require immediate assistance.

USAFIB−
(See ARMY AVIATION FLIGHT INFORMATION BULLETIN.)

**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−
(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 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 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− The VSCS is 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.
(See VOICE SWITCHING AND CONTROL SYSTEM.)
(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 U.S.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

VR−
(See VFR MILITARY TRAINING ROUTES.)

VSCS−
(See VOICE SWITCHING AND CONTROL SYSTEM.)

VTA−
(See VERTEX TIME OF ARRIVAL.)

VTOL AIRCRAFT−
(See VERTICAL TAKEOFF AND LANDING AIRCRAFT.)

# W

WA−
(See AIRMET.)
(See WEATHER ADVISORY.)

WAAS−
(See WIDE-AREA AUGMENTATION SYSTEM.)

WAKE TURBULENCE− Phenomena resulting from the passage of an aircraft through the atmosphere. The term includes vortices, thrust stream turbulence, jet blast, jet wash, propeller wash, and rotor wash both on the ground and in the air.
(See AIRCRAFT CLASSES.)
(See JET BLAST.)
(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 area forecast, as they affect the operation of air traffic and as prepared by the NWS.
(See AIRMET.)
(See SIGMET.)

***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.)

# 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

**2. BACKGROUND:** Currently, there is no defined process for the submission of interpretation or clarification requests regarding the content of FAA Order JO 7110.65, Air Traffic Control. This proposed change formalizes the process as it now exists and delineates responsibilities for interpretation and clarification responses.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| Add | **1-1-9. REQUESTS FOR INTERPRETATIONS OR CLARIFICATIONS TO THIS ORDER** |
| Add | **a. Interpretation requests from field air traffic personnel must be submitted as follows:** |
| Add | **1. The request must be submitted, in writing, by an Air Traffic Facility/District manager to their Service Area Director.** |
| Add | **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.** |
| Add | **3. If it is determined that an interpretation is required, the Service Area Director must submit the request, in writing, to the Air Traffic Procedures Directorate, for a response.** |
| Add | **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.** |
| Add | **1. The Service Center Operations Support Group may consult with the Air Traffic Procedures Directorate when preparing their response.** |
| Add | **2. The Service Center Operations Support Group must provide a written response to the requestor and forward the response to the Air Traffic Procedures Directorate.** |
| Add | **c. Interpretation requests from all other sources must be submitted, in writing, to the Air Traffic Procedures Directorate through the Air Traffic Procedures correspondence mailbox.** |
| Add | *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/air_traffic_procedures.html.* |
| **1-1-9** through **1-1-13** | Renumber **1-1-10** through **1-1-14** |

**1. PARAGRAPH NUMBER AND TITLE:** 1-2-6. ABBREVIATIONS

**2. BACKGROUND:** FAA Order JO 7110.65W added a requirement to provide 10 NM separation in front and behind an aircraft when the data block indicates "NOWGT." The abbreviation description for "NOWGT" was inadvertently omitted from the new basic order.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1-2-6. ABBREVIATIONS** | **1-2-6. ABBREVIATIONS** |
| Add | **NOWGT. No weight. The weight class or wake category has not been determined** |

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**1. PARAGRAPH NUMBER AND TITLE:**
1-2-6. ABBREVIATIONS
2-3-10. CONTROL SYMBOLOGY
2-4-17. NUMBERS USAGE
2-5-2. NAVAID TERMS
2-5-3. NAVAID FIXES
3-3-2. CLOSED/UNSAFE RUNWAY INFORMATION
3-7-5. PRECISION APPROACH CRITICAL AREA
4-1-1. ALTITUDE AND DISTANCE LIMITATIONS
4-6-4. HOLDING INSTRUCTIONS
4-7-5. MILITARY TURBOJET EN ROUTE DESCENT
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5-9-2. FINAL APPROACH COURSE INTERCEPTION
5-9-4. ARRIVAL INSTRUCTIONS
5-9-5. APPROACH SEPARATION RESPONSIBILITY
5-9-6. SIMULTANEOUS DEPENDENT APPROACHES
5-9-9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA) – HIGH UPDATE RADAR
5-13-1. MONITOR ON PAR EQUIPMENT
5-13-3. MONITOR INFORMATION
13-1-8. RECORDING OF CONTROL DATA

**2. BACKGROUND:** Microwave Landing System (MLS) is an all−weather, precision landing system originally intended to replace or supplement instrument landing systems (ILS). The FAA suspended the MLS program in 1994 in favor of the GPS (Wide Area Augmentation System WAAS). The FAA's inventory of instrument flight procedures no longer includes any MLS locations.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1-2-6. ABBREVIATIONS** | **1-2-6. ABBREVIATIONS** |
| ***TBL 1-2-1*** | ***TBL 1-2-1*** |
| FAA Order JO 7110.65 Abbreviations | FAA Order JO 7110.65 Abbreviations |
| Microwave Landing System (MLS) | Delete |

**OLD**

**2−3−10. CONTROL SYMBOLOGY**

***TBL 2-3-12***

Miscellaneous Abbreviations

MLS approach

**NEW**

**2−3−10. CONTROL SYMBOLOGY**

***TBL 2-3-12***

Miscellaneous Abbreviations

Delete

**OLD**

**2−4−17. NUMBERS USAGE**

**Title** through **k2**

**3.** Issue MLS/TACAN frequencies by stating the assigned two− or three−digit channel number.

***EXAMPLE−***
*“M−L−Schannel Five Three Zero.”*

**NEW**

**2−4−17. NUMBERS USAGE**

No Change

**3.** Issue TACAN frequencies by stating the assigned two− or three−digit channel number.

Delete

**OLD**

**2−5−2. NAVAID TERMS**

**Title** through **b**

**1.** VOR/VORTAC/TACAN/MLS/GPS Way-point. State the name of the NAVAID or GPS Waypoint followed by the separate digits of the radial/azimuth/bearing (omitting the word “degrees”) and the word “radial/azimuth/bearing.”

***EXAMPLE−***
*“Appleton Zero Five Zero Radial.”*
*“Lindburg Runway Two Seven M−L−S, Two Six Zero Azimuth.”*

**2.** Arcs about VOR-DME/VORTAC/TACAN/MLS NAVAIDs. State the distance in miles from theNAVAID followed by the words “mile arc,” the direction from the NAVAID in terms of the eight principal points of the compass, the word “of,” and the name of the NAVAID.

***EXAMPLE−***
*“Two Zero mile arc southwest of O−Hare Runway Two Seven Left M−L−S.”*

**NEW**

**2−5−2. NAVAID TERMS**

No Change

**1.** VOR/VORTAC/TACAN/GPS Waypoint. State the name of the NAVAID or GPS Waypoint followed by the separate digits of the radial/azimuth/bearing (omitting the word “degrees”) and the word “radial/azimuth/bearing.”

***EXAMPLE−***
*“Appleton Zero Five Zero Radial.”*

**2.** Arcs about VOR-DME/VORTAC/TACAN NAVAIDs. State the distance in miles from the NAVAID followed by the words “mile arc,” the direction from the NAVAID in terms of the eight principal points of the compass, the word “of,” and the name of the NAVAID.

***EXAMPLE−***
*“Two Zero mile arc southwest of **Kirksville VOR”***

**OLD**

**2−5−3. NAVAID FIXES**

Describe fixes determined by reference to a radial/localizer/azimuth and distance from a VOR-DME/VORTAC/TACAN/ILS-DME or MLS as follows:

**a**

***EXAMPLE−***
*“Appleton Zero Five Zero radial Three Seven mile fix.” “Reno localizer back course Four mile fix.”*
*“Hobby Runway One Two M−L−S Zero Niner Zero azimuth One Two mile fix.”*

**NEW**

**2−5−3. NAVAID FIXES**

Describe fixes determined by reference to a radial/localizer/azimuth and distance from a VOR-DME/VORTAC/TACAN/ILS-DME as follows:

No Change

***EXAMPLE−***
*“Appleton Zero Five Zero radial Three Seven mile fix.” “Reno localizer back course Four mile fix.”*

**OLD**

**3−3−2. CLOSED/UNSAFE RUNWAY INFORMATION**

**Title** through **b**

**c.** Except as permitted by para 4−8−7, Side-step Maneuver, where parallel runways are served by separate ILS/MLS systems and one of the runways is closed, the ILS/MLS associated with the closed runway should not be used for approaches unless not using the ILS/MLS would have an adverse impact on the operational efficiency of the airport.

**NEW**

**3−3−2. CLOSED/UNSAFE RUNWAY INFORMATION**

No Change

**c.** Except as permitted by para 4−8−7, Side-step Maneuver, where parallel runways are served by separate ILS systems and one of the runways is closed, the ILS associated with the closed runway should not be used for approaches unless not using the ILS would have an adverse impact on the operational efficiency of the airport.

**OLD**

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

**Title** through **c**

***NOTE−***
*Signs and markings are installed by the airport operator to define the ILS/MLS 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 para 3−1−12, Visually Scanning Runways, remain valid as appropriate.*

***REFERENCE−***
*AC150/5340−1, Standards for Airport Markings*

**NEW**

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

No Change

***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 **P**ara 3−1−12, Visually Scanning Runways, remain valid as appropriate.*

No Change

**OLD**

**4−1−1. ALTITUDE AND DISTANCE LIMITATIONS**

When specifying a route other than an established airway or route, do not exceed the limitations in the table on any portion of the route which lies within controlled airspace. (For altitude and distance limitations, see TBL 4−1−1, TBL 4−1−2, TBL 4−1−3, and TBL 4−1−4.) (For correct application of altitude and distance limitations see FIG 4−1−1 and FIG 4−1−2.)

***REFERENCE−***
*FAAO JO 7110.65, Para 4−1−5, Fix Use.*
*FAAO JO 7110.65, Para 5−6−2, Methods.*

***TBL 4-1-1*** through ***TBL 4-1-3***

***TBL 4-1−4***
*MLS*
Usable Height and Distance

**NEW**

**4−1−1. ALTITUDE AND DISTANCE LIMITATIONS**

When specifying a route other than an established airway or route, do not exceed the limitations in the table on any portion of the route which lies within controlled airspace. (For altitude and distance limitations, see TBL 4−1−1, TBL 4−1−2 **and** TBL 4−1−3.) (For correct application of altitude and distance limitations see FIG 4−1−1 and FIG 4−1−2.)

No Change

No Change

Delete

| Height (feet) above transmitter | Distance (miles from transmitter) |
|---|---|
| 20,000 | 20 (for glideslope) |
| 20,000 | 20 (for azimuth) |
| *Use the current flight check height/altitude limitations if different from the above minima. | |

**OLD**

**4−6−4. HOLDING INSTRUCTIONS**

**Title** through **e**

***NOTE−***
*It is mandatory for the controller to issue left or right turns every time a holding pattern is issued for MLS.*

**NEW**

**4−6−4. HOLDING INSTRUCTIONS**

No Change

Delete

**OLD**

**4−7−5. MILITARY TURBOJET EN ROUTE DESCENT**

**Title** through **b3**

***EXAMPLE−***
*"Expect ILS/MLS approach to runway eight; radar vectors to localizer/azimuth course. Weather (reported weather)."*

**NEW**

**4−7−5. MILITARY TURBOJET EN ROUTE DESCENT**

No Change

***EXAMPLE−***
*"Expect ILS approach to runway eight; radar vectors to localizer/azimuth course. Weather (reported weather)."*

**OLD**

**4−7−10. APPROACH INFORMATION**

**Title** through **c**

**d.** Advise pilots when the ILS/MLS on the runway in use is not operational if that ILS/MLS is on the same frequency as an operational ILS/MLS serving another runway.

**NEW**

**4−7−10. APPROACH INFORMATION**

No Change

**d.** Advise pilots when the ILS on the runway in use is not operational if that ILS is on the same frequency as an operational ILS serving another runway.

**OLD**

**4−7−13. SWITCHING ILS/MLS RUNWAYS**

TERMINAL

When a change is made from one ILS to another or from one MLS to another at airports equipped with multiple systems which are not used simultaneously, coordinate with the facilities which use the fixes formed by reference to these NAVAIDs.

**NEW**

**4−7−13. SWITCHING ILS RUNWAYS**

No Change

When a change is made from one ILS to another at airports equipped with multiple systems which are not used simultaneously, coordinate with the facilities which use the fixes formed by reference to these NAVAIDs.

**OLD**

**5−1−13. RADAR SERVICE TERMINATION**

**Title** through **b**

***NOTE−***
*1. Termination of radar monitoring when conducting simultaneous ILS/MLS approaches is prescribed in para 5−9−7, Simultaneous Independent ILS/MLS Approaches−Dual & Triple.*

**NEW**

**5−1−13. RADAR SERVICE TERMINATION**

No Change

***NOTE−***
*1. Termination of radar monitoring when conducting simultaneous ILS approaches is prescribed in Para 5−9−7,Simultaneous Independent Approaches− Dual & Triple.*

OLD

**5−9−2. FINAL APPROACH COURSE INTERCEPTION**

**Title** through **a**

NEW

**5−9−2. FINAL APPROACH COURSE INTERCEPTION**

No Change

OLD

***TBL 5−9−1***

Approach Course Interception Angle

| Distance from interception point to approach gate | Maximum interception angle |
|---|---|
| Less than 2 miles or triple simultaneous ILS/MLS approaches in use | 20 degrees |
| 2 miles or more | 30 degrees (45 degrees for helicopters) |

NEW

***TBL 5−9−1***

Approach Course Interception Angle

| Distance from interception point to approach gate | Maximum interception angle |
|---|---|
| Less than 2 miles or triple simultaneous approaches in use | 20 degrees |
| 2 miles or more | 30 degrees (45 degrees for helicopters) |

**OLD**

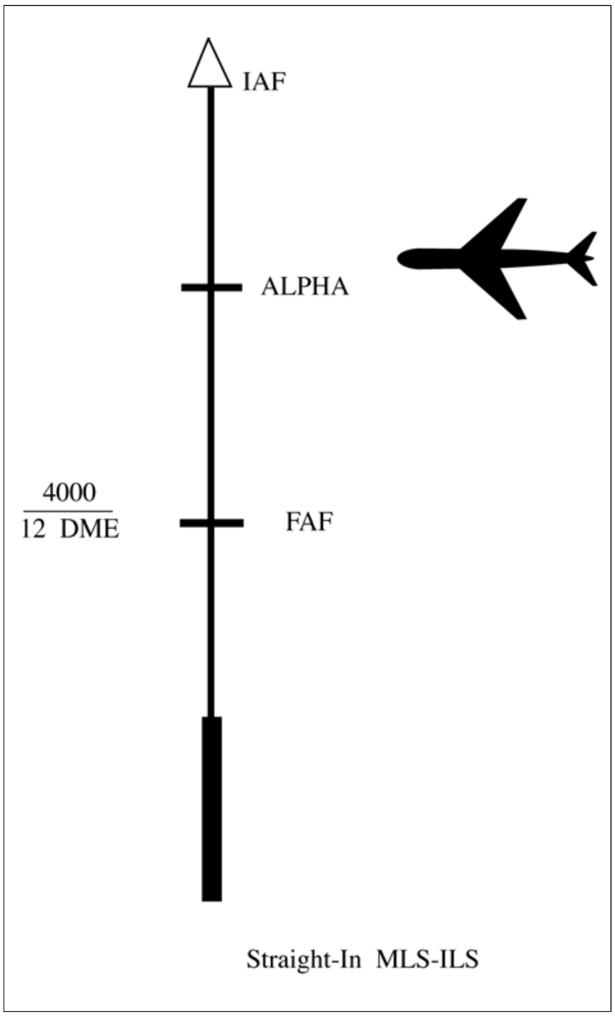
**5−9−4. ARRIVAL INSTRUCTIONS**

**Title** through **c1**

**2.** Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure. (See FIG 5−9−2 thru FIG 5−9−4.)

***FIG 5−9−2***

Arrival Instructions




***EXAMPLE−***
*The aircraft is being vectored to a published segment of the MLS final approach course, 3 miles from Alpha at 4,000 feet. The MVA for this area is 4,000 feet. "Three miles from Alpha. Turn left heading two one zero. Maintain four thousand until established on the azimuth course. Cleared M−L−S runway one eight approach." (See FIG 5−9−2.)*

**NEW**

**5−9−4. ARRIVAL INSTRUCTIONS**

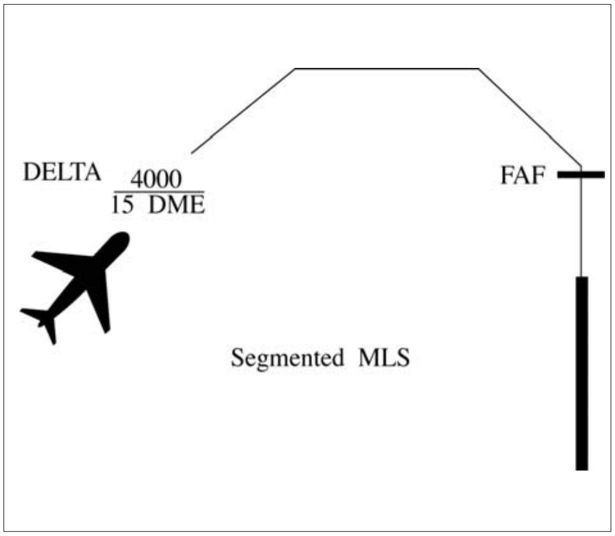
No Change

**2.** Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure.

Delete

Delete

***FIG 5−9−3***
Arrival Instructions

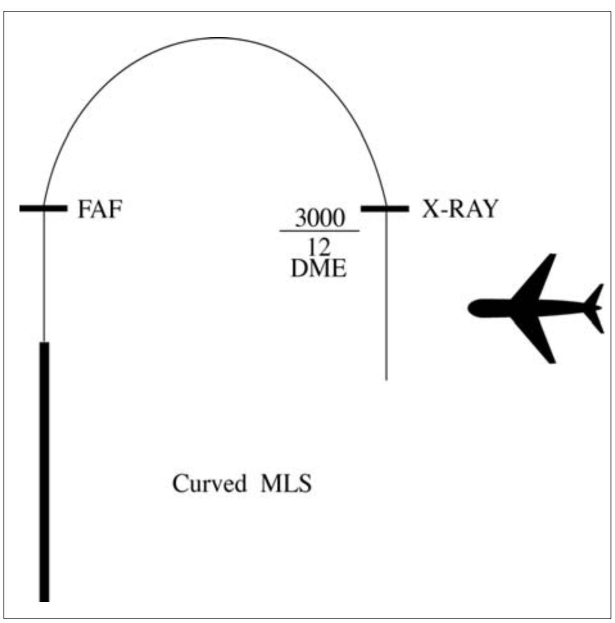



Delete

***EXAMPLE−***
*The aircraft is en route to Delta waypoint at 6,000 feet. The MVA for this area is 4,000 feet. "Cross Delta at or above four thousand. Cleared M−L−S runway one eight approach." (See FIG 5−9−3.)*

Delete

***FIG 5−9−4***
Arrival Instructions




Delete

*EXAMPLE–*
*The aircraft is being vectored to an MLS curved approach, 3 miles from X-ray at 3,000 feet. "Three miles from X-ray. Turn right heading three three zero. Maintain three thousand until established on the azimuth course. Cleared M–L–S runway one eight approach."*
*(See FIG 5–9–4.)*

Delete

***FIG 5-9-5***

**Renumber** to ***FIG 5-9-2***

***EXAMPLE*** through **c2** ***NOTE*** **2**

No Change

***NOTE–***
***3.*** *Aircraft being vectored to the intermediate fix in FIG 5–9–5 must meet all the provisions described in subpara 4–8–1b4.*

***NOTE–***
***3.*** *Aircraft being vectored to the intermediate fix in FIG 5–9–**2** must meet all the provisions described in subpara 4–8–1**h2.***

**d** through **d4** ***NOTE***

No Change

***REFERENCE–***
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception. FAAO JO 7110.65, Para 5–9–7, Simultaneous Independent ILS/MLS Approaches– Dual & Triple.*

***REFERENCE–***
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception. FAAO JO 7110.65, Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple*

**e.** Where a Terminal Arrival Area (TAA) has been established to support RNAV approaches, inform the aircraft of its position relative to the appropriate IAF and issue the approach clearance. (See FIG 5–9–6.)

**e.** Where a Terminal Arrival Area (TAA) has been established to support RNAV approaches, inform the aircraft of its position relative to the appropriate IAF and issue the approach clearance. (See FIG 5–9–**3**.)

***EXAMPLE 1*** through ***EXAMPLE 3***

No Change

***FIG 5-9-6***

**Renumber** to ***FIG 5-9-3***

## OLD

### 5–9–5. APPROACH SEPARATION RESPONSIBILITY

**Title** through **b**

***REFERENCE–***
*FAAO JO 7110.65, Para 5–4–6, Receiving Controller Handoff.*
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception. FAAO JO 7110.65, Para 5–9–6, Parallel Dependent ILS/MLS Approaches.*
*FAAO JO 7110.65, Para 6–7–2, Approach Sequence.*

## NEW

### 5–9–5. APPROACH SEPARATION RESPONSIBILITY

No Change

***REFERENCE–***
*FAAO JO 7110.65, Para 5–4–6, Receiving Controller Handoff.*
*FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception. FAAO JO 7110.65, Para 5–9–6, Simultaneous Dependent Approaches.*
*FAAO JO 7110.65, Para 6–7–2, Approach Sequence.*

## OLD

### 5–9–6. SIMULTANEOUS DEPENDENT APPROACHES

**Title** through **a2**

***FIG 5-9-7***

***EXAMPLE–***
*In FIG 5–9–7, Aircraft 2 is 1.0 mile from Aircraft 1. Approved radar separation must be maintained between Aircraft 1 and Aircraft 3.*

**a3**

***FIG 5-9-8***

## NEW

### 5–9–6. SIMULTANEOUS DEPENDENT APPROACHES

No Change

**Renumber** to ***FIG 5-9-4***

***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.*

No Change

**Renumber** to ***FIG 5-9-5***

*EXAMPLE−*
*In FIG 5−9−8, 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.*

**a4**

***FIG 5-9-9***

*EXAMPLE−*
*In FIG 5−9−9, 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 4.2 miles*

*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.*

No Change

**Renumber** to ***FIG 5-9-6***

*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 4.2 miles*

**OLD**

**5−9−9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)− HIGH UPDATE RADAR**

**Title** through **g3**

**4.** Issue all applicable wake turbulence advisories.

*REFERENCE−*
*FAAO JO 8260.49, Para 13.0, Wake Turbulence Requirements.*
*FAAO JO 7210.3, Para 10−4−6, Simultaneous ILS/MLS Approaches.*
*FAAO JO 7110.65, Para 2−1−20, Wake Turbulence Cautionary Advisories.*
*FAAO JO 7110.65, Para 5−5−4 , Minima*

**NEW**

**5−9−9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)− HIGH UPDATE RADAR**

No Change

**4.** Issue all applicable wake turbulence advisories.

*REFERENCE−*
*FAAO JO 8260.49, Para 13.0, Wake Turbulence Requirements.*
*FAAO JO 7210.3, Para 10−4−6, Simultaneous **Independent** Approaches.*
*FAAO JO 7110.65, Para 2−1−20, Wake Turbulence Cautionary Advisories.*
*FAAO JO 7110.65, Para 5−5−4 , Minima*

**OLD**

**5−13−1. MONITOR ON PAR EQUIPMENT**

**Title** to ***NOTE***

*NOTE−*
***1.** The provisions of this section do not apply to monitoring simultaneous ILS, MLS, or ILS and MLS approaches.*

***NOTE 2*** through **2c**

*REFERENCE−*
*FAAO JO 7110.65, Para 5−9−7, Simultaneous Independent ILS/MLS Approaches− Dual & Triple.*

**NEW**

**5−13−1. MONITOR ON PAR EQUIPMENT**

No Change

*NOTE−*
***1.** The provisions of this section do not apply to monitoring simultaneous approaches.*

No Change

*REFERENCE−*
*FAAO JO 7110.65, Para 5−9−7, Simultaneous Independent Approaches− Dual & Triple.*

**OLD**

**5−13−3. MONITOR INFORMATION**

**Title** through **e**

f. Provide azimuth monitoring only at locations where the MLS glidepath and the PAR glidepath are not coincidental.

*REFERENCE−*
*FAAO JO 7110.65, Para 5−1−13, Radar Service Termination.*

**NEW**

**5−13−3. MONITOR INFORMATION**

No Change

Delete

Delete

| **OLD** | **NEW** |
|---|---|
| **13−1−8. RECORDING OF CONTROL DATA** | **13−1−8. RECORDING OF CONTROL DATA** |
| **Title** through **e** ***NOTE*** | No Change |
| ***TBL 13−1−2*** Miscellaneous Abbreviations | ***TBL 13−1−2*** Miscellaneous Abbreviations |
| MLS - MLS approach | Delete |
| ***TBL 13−1−3*** EDST Equivalents for Control Information Symbols | ***TBL 13−1−3*** EDST Equivalents for Control Information Symbols |
| ARC *mi. dir.* − DME arc of VORTAC, TACAN, or MLS | ARC *mi. dir.* − DME arc of VORTAC **or** TACAN |

---

**1. PARAGRAPH NUMBER AND TITLE:** 2−3−6. AIRCRAFT TYPE

**2. BACKGROUND:** The International Civil Aviation Organization (ICAO) formulates aircraft type designators for the world's aircraft that will most likely receive air traffic services. ICAO provides this information through ICAO Document 8643, Aircraft Type Designators, which is updated at least annually. FAA supplements the ICAO information and publishes it through two documents: FAA Order JO 7340.2, Contractions, and FAA Order JO 7110.65, Air Traffic Control. These FAA documents didn't contain all the aircraft listed by ICAO and the FAA documents contained dissimilar information.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **2−3−6. AIRCRAFT TYPE** | **2−3−6. AIRCRAFT TYPE** |
| Use the approved codes listed in Appendix A through C to indicate aircraft type. | Use the **approved aircraft type designator, in accordance with FAA Order 7360.1, Aircraft Type Designators.** |

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**1. PARAGRAPH NUMBER AND TITLE:**
2-6-2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE
2-9-3. CONTENT

**2. BACKGROUND:** The proposed change to realign the En Route Flight Advisory Service (EFAS), known as "Flight Watch" in air-to-ground communications, to the Inflight position is part of an effort by Flight Service to modernize and streamline service delivery in order to increase efficiencies and value for its stakeholders. When EFAS was introduced in 1972, EFAS specialists received advanced training in aviation weather which included translating data received from radar and satellite displays. At the time, only flight service stations providing EFAS services had access to these products. Currently, all CONUS flight service specialists have access to common weather displays, such as radar and satellite imagery, as well as other weather products which were previously available only to EFAS specialists. Today, a pilot contacting Flight Watch for updated weather information is not able to obtain NOTAM information or flight planning services and must contact Flight Service on a different frequency. With this new approach, a pilot can obtain all services that Flight Service has to offer with one call. The elimination of overlapping services will allow for a smarter, more strategic allocation of limited resources.

## 3. CHANGE:

**OLD**

**2−6−2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)**

**Title** through **a** ***NOTE***

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION (SIGMET, Convective SIGMET, AIRMET, Urgent Pilot Weather Report (UUA), or Center Weather Advisory (CWA), Number or Numbers) FOR (geographical area) AVAILABLE ON HIWAS, FLIGHT WATCH, OR FLIGHT SERVICE FREQUENCIES.*

**b.** Controllers outside of commissioned HIWAS areas must:

**1.** Advise pilots of the availability of hazardous weather advisories. Pilots requesting additional information should be directed to contact the nearest Flight Watch or Flight Service.

**b2**

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION FOR (geographical area) AVAILABLE FROM FLIGHT WATCH OR FLIGHT SERVICE.*

**NEW**

**2−6−2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)**

No Change

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION (SIGMET, Convective SIGMET, AIRMET, Urgent Pilot Weather Report (UUA), or Center Weather Advisory (CWA), Number or Numbers) FOR (geographical area) AVAILABLE ON HIWAS OR FLIGHT SERVICE FREQUENCIES.*

**b.** Controllers outside of commissioned HIWAS areas must:

**1.** Advise pilots of the availability of hazardous weather advisories. Pilots requesting additional information should be directed to contact the nearest Flight Service.

No Change

***PHRASEOLOGY−***
*ATTENTION ALL AIRCRAFT. HAZARDOUS WEATHER INFORMATION FOR (geographical area) AVAILABLE FROM FLIGHT SERVICE.*

**OLD**

**2−9−3. CONTENT**

**Title** through **l**

**m.** Instructions for the pilot to acknowledge receipt of the ATIS message by informing the controller on initial contact.

***EXAMPLE−***
*"Boston Tower Information Delta. One four zero zero Zulu. Wind two five zero at one zero. Visibility one zero. Ceiling four thousand five hundred broken. Temperature three four. Dew point two eight. Altimeter three zero one zero. ILS−DME Runway Two Seven Approach in use. Departing Runway Two Two Right. Hazardous Weather Information for (geographical area) available on HIWAS, Flight Watch, or Flight Service Frequencies. Advise on initial contact you have Delta."*

**NEW**

**2−9−3. CONTENT**

No Change

No Change

***EXAMPLE−***
*"Boston Tower Information Delta. One four zero zero Zulu. Wind two five zero at one zero. Visibility one zero. Ceiling four thousand five hundred broken. Temperature three four. Dew point two eight. Altimeter three zero one zero. ILS−DME Runway Two Seven Approach in use. Departing Runway Two Two Right. Hazardous Weather Information for (geographical area) available on HIWAS or Flight Service Frequencies. Advise on initial contact you have Delta."*

**1. PARAGRAPH NUMBER AND TITLE:** 2-6-4. WEATHER AND CHAFF SERVICES

**2. BACKGROUND:** Instrument flight procedures with published crossing restrictions have been in use for many years. Continued evolution and expanded use of these procedures results in the need to clarify the actions required when an aircraft is issued a clearance to deviate for weather off a procedure that contains published altitude restrictions. Existing guidance does not capture the need to issue an altitude to maintain after aircraft are cleared to deviate from Climb Via or Descend Via clearances, or even the need to issue an altitude when deviating after a basic crossing altitude has been issued. Without an assigned altitude or a published fix to rejoin, Flight Management Systems may no longer process crossing altitudes and in the case of Climb or Descend Via clearances, VNAV may revert to a SID/STAR's top or bottom altitude.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2-6-4 WEATHER AND CHAFF SERVICES** | **2-6-4 WEATHER AND CHAFF SERVICES** |
| **Title** through **g1** | No Change |
| Add | **2. When approving a weather deviation for an aircraft that had previously been issued a crossing altitude, including Climb Via or Descend Via clearances, issue an altitude to maintain along with the clearance to deviate. If you intend on clearing the aircraft to resume the procedure, advise the pilot.** |
| Add | *PHRASEOLOGY−*<br>*DEVIATION (restrictions if necessary) APPROVED, MAINTAIN (altitude), (if applicable) EXPECT TO RESUME (SID, STAR, etc.) AT (NAVAID, fix, waypoint)* |
| Add | *NOTE−*<br>*After a Climb Via or Descend Via clearance has been issued, a vector/deviation off of a SID/STAR cancels the altitude restrictions on the procedure. The aircraft's Flight Management System (FMS) may be unable to process crossing altitude restrictions once the aircraft leaves the SID/STAR lateral path. Without an assigned altitude, the aircraft's FMS may revert to leveling off at the altitude set by the pilot, which may be the SID/STAR's published top or bottom altitude.* |
| Add | *REFERENCE−*<br>*FAAO JO 7110.65, Para 4-2-5, Route or Altitude Amendments*<br>*FAAO JO 7110.65, Para 5-6-2, Methods* |
| **g2** through **g4** | Renumber **g3** through **g5** |

**1. PARAGRAPH NUMBER AND TITLE:** 2-10-1. EN ROUTE SECTOR TEAM POSITION RESPONSIBILITIES

**2. BACKGROUND:** In support of the ATO positive safety culture, several changes are being made to sections in this Order and in FAA Order JO 7210.3, Facility Operations and Administration, to shift away from allusions to "blame" and remove terms such as "operational error/deviation." This change also clarifies the same concept may be applied to en route or oceanic sector teams.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2-10-1. EN ROUTE SECTOR TEAM POSITION RESPONSIBILITIES** | **2-10-1. EN ROUTE <u>OR OCEANIC</u> SECTOR TEAM POSITION RESPONSIBILITIES** |
| **a.** En Route Sector Team Concept and Intent: | **a.** En Route **<u>or Oceanic</u>** Sector Team Concept and Intent: **<u>There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a sector. The team, as a whole, has responsibility for the safe and efficient operation of that sector.</u>** |
| **<u>1.</u>** <u>There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a sector. The team, as a whole, has responsibility for the safe and efficient operation of that sector.</u> | Delete |
| **<u>2.</u>** <u>The intent of the team concept is not to hold the team accountable for the action of individual members, in the event of an operational accident/incident.</u> | Delete |

---

**1. PARAGRAPH NUMBER AND TITLE:** 2-10-2. TERMINAL RADAR/NONRADAR TEAM RESPONSIBILITIES

**2. BACKGROUND:** In support of the ATO positive safety culture, several changes are being made to sections in this Order and in FAA Order JO 7210.3, Facility Operations and Administration, to shift away from allusions to "blame" and to remove terms such as "operational error/deviation."

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2-10-2. TERMINAL RADAR/NONRADAR TEAM RESPONSIBILITIES** | **2-10-2. TERMINAL RADAR/NONRADAR TEAM RESPONSIBILITIES** |
| **a.** *Terminal Radar Team Concept and Intent:* | **a.** *Terminal Radar Team Concept and Intent:* **<u>There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector.</u>** |

| OLD | NEW |
|---|---|
| **1.** There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector. | Delete |
| **2.** The intent of the team concept is not to hold the team accountable for the action of individual members in the event of an operational error/deviation. | Delete |

---

**1. PARAGRAPH NUMBER AND TITLE:** 2-10-3. TOWER TEAM RESPONSIBILITIES

**2. BACKGROUND:** This change reflects support of the ATO positive safety culture. In keeping with that culture, several changes are being made to sections in this Order and in FAA Order JO 7210.3, Facility Operation and Administration, to shift away from allusions to "blame" and to remove terms such as "operational error/deviation."

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **2–10–3. TOWER TEAM RESPONSIBILITIES** | **2–10–3. TOWER TEAM RESPONSIBILITIES** |
| **a.** *Tower Team Concept and Intent:* | **a.** *Tower Team Concept and Intent:* **There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector.** |
| **1.** There are no absolute divisions of responsibilities regarding position operations. The tasks to be completed remain the same whether one, two, or three people are working positions within a facility/sector. The team, as a whole, has responsibility for the safe and efficient operation of that facility/sector. | Delete |
| **2.** The intent of the team concept is not to hold the team accountable for the action of individual members in the event of an operational error/deviation. | Delete |

---

**1. PARAGRAPH NUMBER AND TITLE:** 3-3-7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT

**2. BACKGROUND:** A change in CFR 14 Section 91.175 (k) published in 2005 eliminated the need for middle markers as a component for an Instrument Landing System (ILS). Meanwhile, Flight Standards Service policy allows for the elimination of outer markers (OM) and inner markers (IM) where they no longer serve their original need. Many of these NAVAIDS have since been decommissioned. It has become necessary to revise FAA Order JO 7110.65, Para 3-3-7, FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT to reflect these changes.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **3-3-7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT** | **3-3-7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT** |
| **Title** through **e** | No Change |
| **1.** The aircraft is outside the middle marker (MM), check for encroachment those portions of the critical area that can be seen from the tower. It is understood that the entire critical area may not be visible due to low ceilings and poor visibility. The check is strictly to determine possible causal factors for the out-of-tolerance situation. If the alarm has not cleared prior to the aircraft's arriving at the MM, immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable. | **1.** The aircraft is outside the middle marker (MM) **or in the absence of a MM, 1/2 mile final** check for encroachment **of** those portions of the critical area that can be seen from the tower. It is understood that the entire critical area may not be visible due to low ceilings and poor visibility. The check is strictly to determine possible causal factors for the out-of-tolerance situation. If the alarm has not cleared prior to the aircraft's arriving at the MM **or in the absence of a MM, 1/2 mile final,** immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable. |
| **2.** The aircraft is between the MM and the inner marker (IM), immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable. | **2.** The aircraft is between the MM **or 1/2 mile final** and the inner marker (IM)**, or if the IM is not installed, the CAT II Missed Approach Point (MAP),** immediately issue an advisory that the FFM remote status sensing unit indicates the localizer is unreliable. |
| ***PHRASEOLOGY*** | No Change |
| **3.** The aircraft has passed the IM, there is no action requirement. Although the FFM has been modified with filters which dampen the effect of false alarms, you may expect alarms when aircraft are located between the FFM and the localizer antenna either on landing or on takeoff. | **3.** The aircraft has passed the IM **or the CAT II MAP (if the IM is not installed)** there is no action requirement. Although the FFM has been modified with filters which dampen the effect of false alarms, you may expect alarms when aircraft are located between the FFM and the localizer antenna either on landing or on takeoff. |

**1. PARAGRAPH NUMBER AND TITLE:** 3-8-1. SEQUENCE/SPACING APPLICATION

**2. BACKGROUND:** The following is a response to the Runway Safety Group Root Cause Analysis Team review of a runway incursion event at Kansas City Downtown (KMKC). The cause was a helicopter pilot that elected to hover over the runway after being issued a cleared for the option.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **3–8–1. SEQUENCE/SPACING APPLICATION** | **3–8–1. SEQUENCE/SPACING APPLICATION** |
| **Title** through ***PHRASEOLOGY*** | No Change |
| ***NOTE–***<br>***1.*** *The "Cleared for the Option" procedure will permit an instructor pilot/flight examiner/pilot the option to make a touch-and-go, low approach, missed approach, stopand-go, or full stop landing. This procedure will only be used at those locations with an operational control tower and will be subject to ATC approval.* | ***NOTE–***<br>***1.*** *The "Cleared for the Option" procedure will permit an instructor pilot/flight examiner/pilot the option to make a touch-and-go, low approach, missed approach, stop-and-go, or full stop landing. This procedure will only be used at those locations with an operational control tower and will be subject to ATC approval.* ***After ATC approval of the option, the pilot should inform ATC as soon as possible of any delay on the runway during their stop-and-go or full stop landing.*** |
| ***NOTE 2*** *and* ***NOTE 3*** | No Change |
| Add | ***REFERENCE–***<br>*FAAO JO 7110.65, Para 3−7−2 Taxi and Ground Movement Operations.*<br>***AIM, Para 4−3−22, Option Approach*** |

---

**1. PARAGRAPH NUMBER AND TITLE:** 3-9-6. SAME RUNWAY SEPARATION

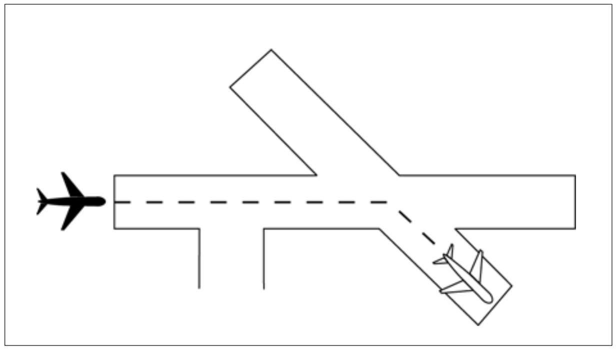
**2. BACKGROUND:** Paragraph 3-9-6 refers to departing aircraft and how to separate a departing aircraft from previous departing or arriving aircraft. In subparagraph "a" references are made to FIG 3-9-1 and FIG 3-9-2 and both of these figures show the departure aircraft on the runway, shaded, with the previous departing aircraft depicted in outline form. In subparagraph "b" a reference is made to FIG 3-9-3 that is intended to depict a departing aircraft from a preceding arriving aircraft. The preceding arriving aircraft is correctly depicted in outline form, consistent with previous figures in this chapter. However, while the departure is shaded consistent with the two previous figures in this chapter, it is not depicted on the runway.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **3-9-6. SAME RUNWAY SEPARATION** | **3-9-6. SAME RUNWAY SEPARATION** |
| **Title** through **b** | No Change |

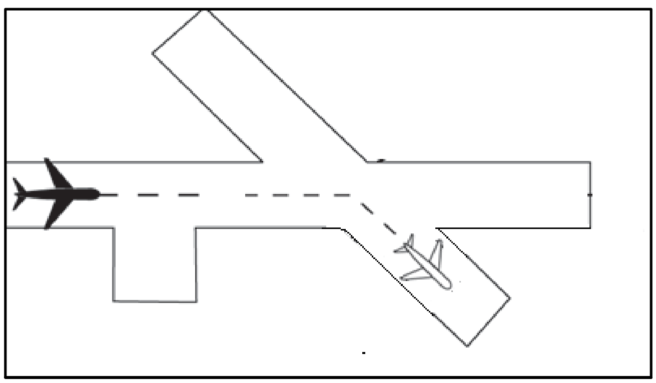
**OLD**

***FIG 3−9−3***
Preceding Landing Aircraft Clear of Runway



**NEW**

***FIG 3−9−3***
Preceding Landing Aircraft Clear of Runway



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**1. PARAGRAPH NUMBER AND TITLE:** 3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

**2. BACKGROUND:** The placement of paragraph 3-9-9, 2e may result in the conclusion that the procedures are only required for operations requiring wake turbulence application. In fact, the provisions of this paragraph should be applied for all converging runway operations.

**3. CHANGE:**

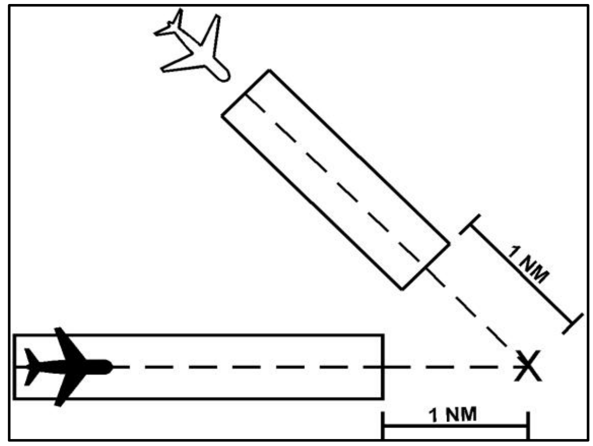
| OLD | NEW |
|---|---|
| **3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATION** | **3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATION** |
| **Title** through **a2** | No Change |
| Add | **b. If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway within 1 NM of either departure end, apply the provisions of Paragraph 3-9-8, Intersecting runway/Intersecting Flight Path Operations. (See FIG 3-9-13 and FIG 3-9-14).** |

Add

*__REFERENCE–__*
*__FAAO JO 7210.3, Para 10-3-14, Go-Around/Missed Approach__*

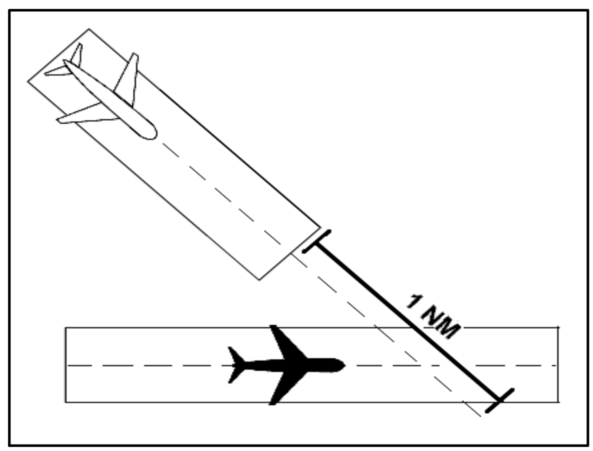
Add

***FIG 3–9–__13__***
Intersecting Runway Separation




Add

***FIG 3–9–__14__***
Intersecting Runway Separation




__**b.**__ Separate IFR/VFR aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–__13__).

__**c.**__ Separate IFR/VFR aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–__**15**__).

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

No Change

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

No Change

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

No Change

***FIG 3–9–__13__***
Intersecting Runway Separation

***FIG 3–9–__15__***
Intersecting Runway Separation

No Change

***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.*

**c.** Separate IFR/VFR 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−**14**).

**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 3−9−14***

Intersecting Runway Separation

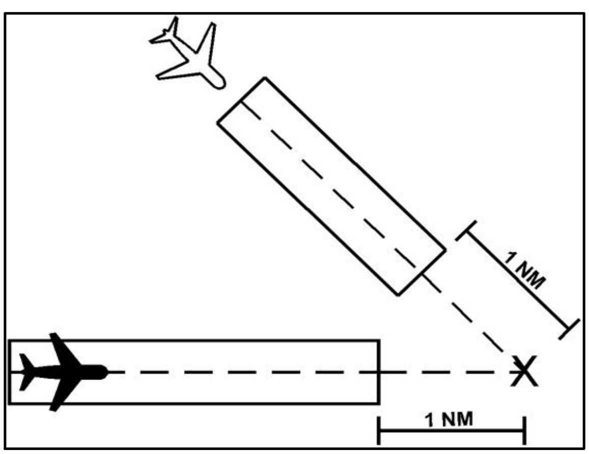
**d.** Do not approve pilot requests to deviate from the required time interval if the preceding aircraft requires wake turbulence separation.

***REFERENCE−***
*FAAO JO 7110.65, Para 5-8-3, Successive or Simultaneous Departures.*
*FAAO JO 7110.65, Para 5-8-5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways.*
*FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.*

**e.** If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance of 1NM or less from either departure end, apply the provisions of Paragraph 3-9-8, Intersecting Runway Separation, 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 3-9-15 and FIG 3-9-16.)

***FIG 3−9−15***

Intersecting Runway Separation




**d.** Separate IFR/VFR 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−**16**).

No Change

No Change

No Change

***FIG 3−9−16***

Intersecting Runway Separation

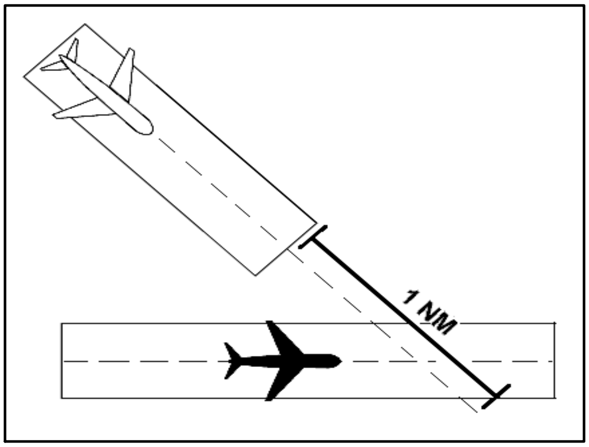
**e.** Do not approve pilot requests to deviate from the required time interval if the preceding aircraft requires wake turbulence separation.

No Change

Delete

Delete

| | |
|---|---|
| ***<u>FIG 3−9−16</u>***<br><u>Intersecting Runway Separation</u> | Delete |




**1. PARAGRAPH NUMBER AND TITLE:** 3-10-5. LANDING CLEARANCE

**2. BACKGROUND:** Airport traffic control towers responsible for sequencing arriving aircraft employ various techniques to establish a landing sequence. Occasionally, control instructions necessary to sequence aircraft are not compatible with the phraseology "CONTINUE" specified in the example in FAA Order JO 7110.65 paragraph 3-10-5. Examples of incompatible phraseology with the word "CONTINUE" include: "EXTEND DOWNWIND, TURN BASE NOW, TURN BASE IN ONE MILE, BASE APPROVED, MAKE LEFT THREE-SIXTY", etc. When an inbound aircraft is issued a restriction such as "TOWER WILL CALL BASE" and a controller subsequently issues the instruction "CONTINUE, TRAFFIC HOLDING IN POSITION", pilots have reported uncertainty on the meaning of "CONTINUE" in this situation. Some pilots believe it means continue flying the current leg of the traffic pattern, some think it means fly a normal pattern. Similarly, some controllers report being unsure whether instructing an aircraft to "CONTINUE" deletes a previously issued control instruction.

**3. CHANGE:**

| <u>**OLD**</u> | <u>**NEW**</u> |
|---|---|
| **3−10−5. LANDING CLEARANCE** | **3−10−5. LANDING CLEARANCE** |
| **Title** through **b2c** | No Change |
| ***EXAMPLE−***<br>*"Delta One, Runway One−Eight, continue, traffic holding in position."*<br>*"Delta One, Runway One−Eight, cleared to land. Traffic holding in position."* | ***EXAMPLE−***<br>*"Delta One, Runway One−Eight, continue, traffic holding in position."*<br>*"Delta One, Runway One−Eight, cleared to land. Traffic holding in position."*<br>***<u>"Twin Cessna Four Four Golf, Runway One-Niner base approved, traffic holding in position."</u>***<br>***<u>"Baron Two Five Foxtrot, Runway One-Niner Right extend downwind, tower will call your base, traffic holding in position."</u>*** |

**1. PARAGRAPH NUMBER AND TITLE:** 4-2-5. ROUTE OR ALTITUDE AMENDMENTS

**2. BACKGROUND:** Flight Standards Service recommends 4-2-5b, Note 2 be stated better to avoid any potential misinterpretation. It is not a good idea to have "mandatory" used in the same sentence with "crossing altitudes." This could potentially mislead the audience into believing all altitudes on an ODP are "mandatory altitudes," as opposed to what is correctly specified in the ODP text or graphic.

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **4-2-5. ROUTE OR ALTITUDE AMENDMENTS** | **4-2-5. ROUTE OR ALTITUDE AMENDMENTS** |
| **Title** through **b** ***NOTE* 1** | No Change |
| **2.** Crossing altitudes and speed restrictions on ODPs are mandatory and cannot be canceled by ATC. | **2.** Crossing altitudes and speed restrictions on **Obstacle Departure Procedure/s (**ODP**/s)** cannot be canceled **or amended** by ATC. |

---

**1. PARAGRAPH NUMBER AND TITLE:** 4-3-2. DEPARTURE CLEARANCES

**2. BACKGROUND:** Flight Standards Service (AFS-420) has identified that paragraph 4-3-2 (c) (2) only refers to textually described obstacle departure procedures (ODP).

**3. CHANGE:**

| **OLD** | **NEW** |
|---|---|
| **4-3-2. DEPARTURE CLEARANCES** | **4-3-2. DEPARTURE CLEARANCES** |
| **Title** through **c1(c)** | No Change |
| **2.** Where only textually described obstacle departure procedures (ODP) have been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance. | **2.** Where **an** obstacle departure procedure (ODP) **has** been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance. |
| Add | ***EXAMPLE−*** <br> ***"Depart via the (airport name)(runway number) departure procedure."*** <br> ***Or*** <br> ***"Depart via the (graphic ODP name) obstacle departure procedure."*** |
| Add | ***NOTE−*** <br> ***Some aircraft are required by 14 CFR 91.175 to depart a runway under IFR using the ODP absent other instructions from ATC.*** |
| Add | ***NOTE−*** <br> ***IFR takeoff minimums and obstacle departure procedures are prescribed for specific airports/runways and published in either a textual, or graphic form with the label (OBSTACLE) in the procedure title, and documented on an appropriate FAA Form 8260. To alert pilots of their existence, instrument approach procedure charts are annotated with a symbol:*** |
| Add |  . |

| | |
|---|---|
| **3.** Do not solicit use of the Visual Climb over Airport (VCOA) option. | No Change |
| ***NOTE−*** *Pilots will specifically advise ATC of their intent to use the VCOA option.* | No Change |
| ***EXAMPLE−*** *“Depart via the (airport name) (runway number) departure procedure.”* | Delete |
| ***NOTE−*** *IFR takeoff minimums and departure procedures are prescribed for specific airports/runways and published in a tabular form supplement to the FAA instrument approach procedure chart and appropriate FAA Form 8260. These procedures are identified on instrument approach procedure charts with a symbol:* | Delete |
|  . | Delete |

**1. PARAGRAPH NUMBER AND TITLE:**
4-7-12. AIRPORT CONDITIONS
4-8-1. APPROACH CLEARANCE
4-8-9. MISSED APPROACH
4-8-10. APPROACH INFORMATION

**2. BACKGROUND:** In response to aviation industry concerns over cold weather effect on indicated altitudes versus that of an aircraft’s true altitude, the FAA completed an analysis to determine if current 14 CFR Part 97 instrument approach procedures in the United States National Airspace System are at risk of compromised required obstacle clearances (ROC) during time of extreme cold temperature. As a result of the study, all airports with runways greater than 2500 feet with instrument approach procedures were analyzed to determine which approach procedures needed compensation based on a formula that articulated the potential for a degree of ROC that could be compromised. A safety risk management panel (SRMP) was conducted on the impact to ATC operations, and a condition of the SRMP was to add content to the pertinent FAA documents to assist in pilot and controller awareness of the need to apply cold temperature compensation.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4−7−12. AIRPORT CONDITIONS** | **4−7−12. AIRPORT CONDITIONS** |
| **Title** through **a** | No Change |

| OLD | NEW |
| --- | --- |
| ***NOTE−*** ***1.*** *Airport conditions information, in the provision of en route approach control service, does not include information pertaining to the airport surface environment other than the landing area(s) or obstruction information for aircraft that will be cleared for an instrument approach. Accordingly, D NOTAMs that contain the keywords TAXIWAY (TWY), RAMP, APRON, or SERVICE (SVC) are not required to be issued. Additionally, Obstruction NOTAMs (OBST) are not required to be issued if an aircraft will be cleared for an instrument approach.* | ***NOTE−*** ***1.*** *Airport conditions information, in the provision of en route approach control service, does not include information pertaining to **cold temperature compensation or** the airport surface environment other than the landing area(s) or obstruction information for aircraft that will be cleared for an instrument approach. Accordingly, D NOTAMs that contain the keywords TAXIWAY (TWY), RAMP, APRON, or SERVICE (SVC) are not required to be issued. Additionally, Obstruction NOTAMs (OBST) are not required to be issued if an aircraft will be cleared for an instrument approach.* |
| ***NOTE*** **2** through **b** | No Change |
| **OLD** | **NEW** |
| **4−8−1. APPROACH CLEARANCE** | **4−8−1. APPROACH CLEARANCE** |
| **Title** through **a5** | No Change |
| Add | **6. Controllers must not disapprove a pilot request to cold temperature compensate in conjunction with the issuance of an approach clearance.** |
| ***NOTE*** **1** | No Change |
| ***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."* | ***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," "Procedure not authorized at night," **or Snowflake icon with associated temperature**.* |
| ***NOTE*** **3** through ***NOTE*** **9** | No Change |

Add

***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.***

| OLD | NEW |
|---|---|
| ***REFERENCE–***<br>*FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).* | ***REFERENCE–***<br>*FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS).*<br>***P/CG Term – Cold Temperature Compensation***<br>***AIM, Paragraph 5-1-17, Cold Temperature Operations***<br>***AIM, Paragraph 5-5-4, Instrument Approach*** |

| OLD | NEW |
|---|---|
| **4-8-9. MISSED APPROACH** | **4-8-9. MISSED APPROACH** |
| **Title** through ***NOTE*** **2** | No Change |
| Add | ***NOTE–***<br>***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. Consideration should be given to vectoring aircraft at or above the requested compensating altitude if possible.*** |
| Add | ***REFERENCE–***<br>***AIM, Paragraph 5-5-5, Missed Approach*** |

| OLD | NEW |
|---|---|
| **4-8-10. APPROACH INFORMATION** | **4-8-10. APPROACH INFORMATION** |
| **Title** through **e** | No Change |

| | |
|---|---|
| Add | **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.** |
| Add | *REFERENCE−*<br>*AIM, Paragraph 5-1-17, Cold Temperature Operations*<br>*AIM, Paragraph 5-5-4, Instrument Approach*<br>*AIM, Paragraph 5-5-5, Missed Approach* |

---

**1. PARAGRAPH NUMBER AND TITLE:** 4-8-1. APPROACH CLEARANCE

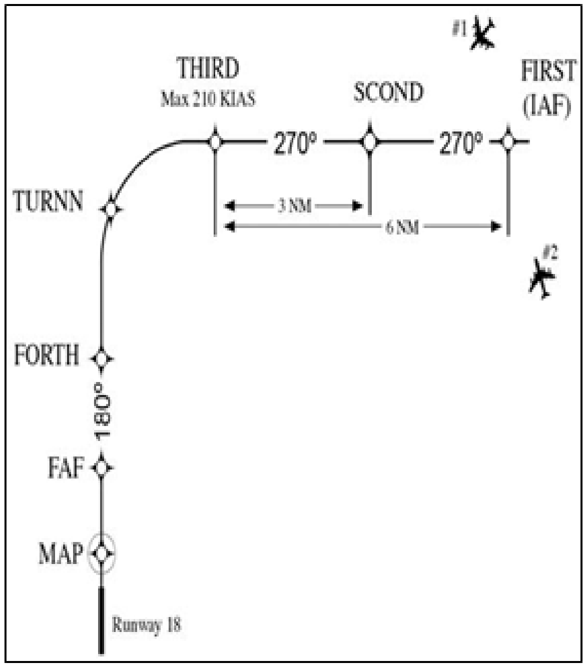
**2. BACKGROUND:** In the January 2015 change to this paragraph, sub-paragraph f was revised. Content involving Radius to Fix (RF) legs was revised by removing mileage distances that were stated for the segment prior to commencing an RF leg. However, the associated FIG 4-8-5 was not changed at the time the content was revised.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4-8-1. APPROACH CLEARANCE** | **4-8-1. APPROACH CLEARANCE** |
| **Title** through **i4** ***NOTE*** | No Change |

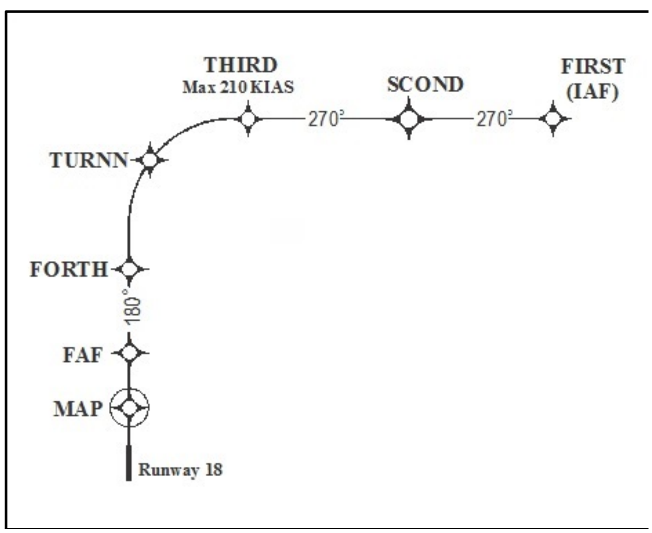
**OLD**

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




**NEW**

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



**1. PARAGRAPH NUMBER AND TITLE:** 5-1-3. RADAR USE

**2. BACKGROUND:** FAA Order JO 7110.310, Automatic Dependent Surveillance-Broadcast (ADS-B) Air Traffic Control (ATC) Services at Air Route Traffic Control Centers (ARTCCs) Using En Route Automation Modernization (ERAM) and FAA Order JO 7110.313 Wide Area Multilateration (WAM) Air Traffic Control (ATC) Services at Air Route Traffic Control Centers (ARTCCs) approved ADS-B and WAM surveillance information for use in the En Route domain as a surveillance source. Safety analyses have been completed that support the use of ADS-B and WAM targets in all areas with or without existing radar coverage.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **5-1-3. RADAR USE** | **5-1-3. ATC SURVEILLANCE SOURCE USE** |
| Use radar information derived from primary and secondary radar systems. | Use **approved ATC surveillance sources.** |
| ***REFERENCE*** through **b** | No Change |
| Add | **c. All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS-B and WAM.** |
| Add | ***NOTE−*** *Targets derived from ADS-B and/or WAM cannot be used to provide 3NM separation in the EAS. 3NM targets are not derived from ADS-B and/or WAM within the EAS.* |
| Add | ***REFERENCE−*** *JO 7110.65, Para4-1-2, Exceptions.*<br>*JO 7110.65, Para 4-4-2, Route Structure Transitions*<br>*JO 7110.65, Para 5-5-1, Application*<br>*JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes*<br>*JO 7110.65, Chapter 6, Nonradar*<br>*JO 7110.65, Para 5-5-4, Minima*<br>*JO 7210.3 3-6-2 ATC Surveillance Source Use* |

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**1. PARAGRAPH NUMBER AND TITLE:** 5-4-3. METHODS

**2. BACKGROUND:** Since 2009 the New York Air Route Traffic Control Center has been working under a waiver that allows the use of the Computer Identification Number (CID) in lieu of using the aircraft call sign or discreet beacon code for aircraft identification under paragraph 5-4-3, METHODS, sub-paragraph b.2. This DCP incorporates the provisions of the waiver so the use of the CID is available to all Enroute facilities.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **5-4-3. METHODS** | **5-4-3. METHODS** |
| **Title** through **b2(a)** | No Change |
| **(b)** The discrete beacon code of the aircraft during inter-facility point-outs only, if both the receiving and the transferring controllers agree. | **(b)** The discrete beacon code of the aircraft during inter-facility point-outs only, if both the receiving and the transferring controllers agree**, or** |

| | |
|---|---|
| Add | **(c)** **EN ROUTE. The Computer Identification Number (CID) during intra-facility point-outs.** |
| Add | ***EXAMPLE−***<br>*"Point Out, Southwest of Richmond VOR, C-I-D 123…"* |

---

**1. PARAGRAPH NUMBER AND TITLE:** 5-6-2. METHODS

**2. BACKGROUND:** Instrument flight procedures with published crossing restrictions have been in use for many years. Continued evolution of flight procedures has resulted in the need to clarify and supplement actions required when an aircraft is issued a clearance off a procedure that contains published altitude restrictions. Current guidance for when an aircraft is vectored off a procedure has not changed since 1980. Existing guidance does not capture the nuances surrounding Climb Via and Descend Via clearances when subsequent radar vectors are issued or aircraft are cleared to deviate from Climb Via/Descend Via procedures. Without an assigned altitude or a published fix to rejoin, Flight Management Systems may no longer calculate crossing altitudes and VNAV may revert to a SID/STAR's top or bottom altitude. In a separate issue, Flight Standards AFS-420 identified an issue with regards to Obstacle Departure Procedures (ODP). In order to be consistent with language currently found in the AIM, they recommend adding guidance to this order for when an aircraft is vectored off an Obstacle Departure Procedure (ODP).

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **5-6-2. METHODS** | **5-6-2. METHODS** |
| **Title** through **a3** | No Change |
| **b.** When initiating a vector, advise the pilot of the purpose. | **b.** When initiating a vector, advise the pilot of the purpose, **and if appropriate, what to expect when radar navigational guidance is terminated.** |
| ***PHRASEOLOGY−***<br>*VECTOR TO (fix or airway).*<br><br>*VECTOR TOINTERCEPT (name of NAVAID) (specified) RADIAL.*<br><br>*VECTOR FOR SPACING.*<br><br>*VECTOR TO FINAL APPROACH COURSE,*<br><br>*or if the pilot does not have knowledge of the type of approach,*<br><br>*VECTOR TO (approach name) FINAL APPROACH COURSE.* | ***PHRASEOLOGY−***<br>*VECTOR TO (fix or airway).*<br><br>*VECTOR TO INTERCEPT (name of NAVAID) (specified) RADIAL.*<br><br>*VECTOR FOR SPACING.*<br><br>***(if appropriate) EXPECT DIRECT (NAVAID, waypoint, fix)***<br><br>*VECTOR TO FINAL APPROACH COURSE,*<br><br>*or if the pilot does not have knowledge of the type of approach,*<br><br>*VECTOR TO (approach name) FINAL APPROACH COURSE.* |
| ***NOTE*** | No Change |
| **c.** Issue with the vector an altitude to maintain and all appropriate altitude restrictions when: | **c. When vectoring or approving course deviations, assign an altitude to maintain when:** |

| | |
|---|---|
| **1.** The vector will take the aircraft off an assigned procedure which contains altitude instructions, i.e., instrument approach, nonradar SID, FMSP, etc. | **1.** The vector **or approved deviation is** off an assigned procedure which contains altitude instructions, i.e., instrument approach, etc. |
| **c2** | No Change |
| Add | **3. The vector or approved deviation is off an assigned procedure that contains published altitude restrictions, i.e., SID, STAR, and a clearance to Climb Via/Descend Via has been issued.** |
| **d.** If appropriate, advise the pilot what to expect when the vector is completed. | **d. When vectoring or approving an aircraft to deviate off of a procedure that includes published altitude restrictions, advise the pilot if you intend on clearing the aircraft to resume the procedure.** |
| ***PHRASEOLOGY−*** <br> *EXPECT TO RESUME (Route, SID, STAR, FMSP, etc.).* | ***PHRASEOLOGY−*** <br> ***FLY HEADING (degrees), MAINTAIN (altitude),*** *EXPECT TO RESUME (SID, STAR, etc.).* ***DEVIATION (restrictions if necessary) APPROVED, MAINTAIN (altitude) EXPECT TO RESUME (SID, STAR, etc.) AT (NAVAID, fix, waypoint)*** |
| ***NOTE−*** <br> *You must ensure that the pilot is made aware if he/she is expected to resume a previously issued route procedure.* | ***NOTE−*** <br> ***After a Climb Via or Descend Via clearance has been issued, a vector/deviation off of a SID/STAR cancels the altitude restrictions on the procedure. The aircraft's Flight Management System (FMS) may be unable to process crossing altitude restrictions once the aircraft leaves the SID/STAR lateral path. Without an assigned altitude, the aircraft's FMS may revert to leveling off at the altitude set by the pilot, which may be the SID/STAR's published top or bottom altitude.*** |
| **e** through **e3** | No Change |
| ***PHRASEOLOGY−*** <br> *(Position with respect to course/fix along route), RESUME OWN NAVIGATION,* <br> *or* <br> *FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix),* <br> *or* <br> *RESUME (name/numberFMSP/SID/transition/STAR/ procedure).* | ***PHRASEOLOGY−*** <br> *(Position with respect to course/fix along route), RESUME OWN NAVIGATION, FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix), RESUME (SID/STAR/**transition**/procedure).* |
| ***REFERENCE−*** <br> *FAAO JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.* | ***REFERENCE−*** <br> *FAAO JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations* <br> ***FAAO JO 7110.65,Paragraph 4-5-7, Altitude Information*** |
| **f.** Aircraft instructed to resume a procedure which contains restrictions (SID/STAR/FMSP, etc.) must be issued/reissued all applicable restrictions or must be advised to comply with those restrictions. | **f.** Aircraft instructed to resume a procedure which contains restrictions (SID/STAR, etc.) must be issued/reissued all applicable restrictions or must be advised to comply with those restrictions. |

| | |
|---|---|
| ***PHRASEOLOGY−***<br>*RESUME (name/numberFMSP/SID/transition/STAR), COMPLY WITH RESTRICTIONS.* | ***PHRASEOLOGY−***<br>*RESUME (name/SID/transition/STAR), COMPLY WITH RESTRICTIONS.* ***PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude) CLIMB VIA/DESCEND VIA (SID/STAR)*** |
| ***EXAMPLE−***<br>*"Resume the Mudde One Arrival, comply with restrictions."*<br>*"Cleared direct Luxor, resume the Ksino One arrival, comply with restrictions."* | ***EXAMPLE −***<br>*"Resume the Mudde One Arrival, comply with restrictions."*<br>*"Cleared direct Luxor, resume the Ksino One arrival, comply with restrictions."*<br>***"Cleared direct HITME, cross HITME at or above one one thousand, climb via the Boach Five departure."*** |
| Add | **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 cancelled.** |
| Add | ***NOTE−***<br>***Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is cancelled and ATC cannot clear the aircraft to resume the ODP.*** |
| Add | ***REFERENCE−***<br>***P/CG, Obstacle Departure Procedure*** |
| **g** | **Re−Letter** to **h** |
| **i** | **Re−Letter** to **j** |

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**1. PARAGRAPH NUMBER AND TITLE:** 5-9-10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS

**2. BACKGROUND:** The Flight Technologies and Procedures Division, AFS-400, removed the requirement to provide 1,000 feet vertical or 3 miles radar separation during turn on to widely spaced parallel finals and substituted procedural design to allow simultaneous independent parallel operations between RNAV (RNP) approaches with RF legs and a RNAV (RNP) approaches with RF legs and certain other straight−in approaches.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **5-9-10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS** | **5-9-10. SIMULTANEOUS INDEPENDENT APPROACHES TO WIDELY-SPACED PARALLEL RUNWAYS WITHOUT FINAL MONITORS** |
| **Title** through **a** | No Change |
| **1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn-on to parallel final approach. | **1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft**:** |
| Add | **(a) during turn-on to parallel final approach, or** |

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| Add | (b) **conducting an RNAV (RNP) approach that contains a Radius-to-Fix (RF) leg and an aircraft conducting a straight-in ILS/RNAV with vertical guidance/GLS or another RNAV (RNP) approach with an RF leg until both aircraft are established on their respective approach procedures. Ensure dual RNAV (RNP) approaches that contain RF legs are limited to aircraft approaching from opposite downwinds or base legs and all approach pairings must be conducted so that the approach courses do not overlap.** |
| Add | ***REFERENCE–*** ***FAAO JO 7210.3, Paragraph 10-4-7, Simultaneous Widely-Spaced Parallel Operations*** |

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**1. PARAGRAPH NUMBER AND TITLE:** 7-2-1. VISUAL SEPARATION

**2. BACKGROUND:** Improper application of tower-applied and pilot-applied visual separation has been identified by the Air Traffic Organization (ATO) Safety Roundtable as an ATO Top 5 Issue for 2015. The Top 5 is a quantifiable list of hazards that contribute to the highest risk in the National Airspace System.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **7-2-1. VISUAL SEPARATION** | **7-2-1. VISUAL SEPARATION** |
| Aircraft may be separated by visual means, as provided in this paragraph, when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, and known weather conditions. Reported weather conditions must allow the aircraft to remain within sight until other separation exists. Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining | **Visual separation may be applied** when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, **and aircraft position**. Weather conditions must allow the aircraft to remain within sight until other separation exists. |
| ***REFERENCE*** | No Change |
| **a1** | No Change |
| **(a)** Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately as prescribed in paragraph 3-9-3, Departure Control Instructions, subparagraph a2. | **(a)** Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately **with applicable military aircraft** as prescribed in **P**aragraph 3-9-3, Departure Control Instructions, subparagraph a2. |
| **(b)** The tower visually observes the aircraft, issues timely traffic advisories, and maintains visual separation between the aircraft. The use of tower-applied visual separation is not authorized when wake turbulence separation is required. | **(b)** The tower visually observes the aircraft, issues timely traffic advisories, and **provides** visual separation between the aircraft. |

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| **(c)** Issue subsequent control instructions as necessary to ensure continued separation between the applicable aircraft. | **(c)** Issue control instructions as necessary to ensure continued separation between the applicable aircraft. |
| Add | **(d) Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation.** |
| Add | **(e) The use of tower-applied visual separation is not authorized when wake turbulence separation is required.** |
| ***NOTE–*** *Adjacent airports with operating ATCTs are not authorized to apply visual separation between their traffic and the other ATCT's traffic.* | **(f)** Adjacent airports with operating ATCTs are not authorized to apply visual separation between their traffic and the other ATCT's traffic. |
| **a2(a)** and **a2(b)** | No Change |
| **(1)** Tell the pilot about the other aircraft. Include position, direction, and, unless it is obvious, the other aircraft's intention. | **(1)** Tell the pilot about the other aircraft. Include position, direction, **type** and, unless it is obvious, the other aircraft's intention. |
| **a2(b)(2)** and **a2(b)(3)** | No Change |
| ***PHRASEOLOGY–*** *TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information).* <br> *DO YOU HAVE IT IN SIGHT?* <br> *If the answer is in the affirmative,* <br> *MAINTAIN VISUAL SEPARATION.* | ***PHRASEOLOGY–*** ***(ACID),*** *TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information).* <br> ***If required,*** <br> ***(ACID), REPORT TRAFFIC IN SIGHT or*** *DO YOU HAVE IT IN SIGHT?* <br> ***If the pilot reports traffic in sight, or*** *the answer is in the affirmative,* <br> ***(ACID),*** *MAINTAIN VISUAL SEPARATION* |
| Add | ***NOTE–*** ***Towers must use the procedures contained in Paragraph 3-1-6, Traffic Information, Subparagraph b or c, as appropriate.*** |
| **(c)** If the pilot advises he/she has the traffic in sight and will maintain visual separation from it (the pilot must use that entire phrase), the controller need only "approve" the operation instead of restating the instructions. | **(c)** If the pilot **reports** the traffic in sight and will maintain visual separation from it (the pilot must **state both**), the controller may "approve" the operation instead of restating the instructions. |
| ***PHRASEOLOGY–*** *APPROVED.* | ***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 or when the controller has approved pilot-initiated visual separation.* | ***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.* |
| ***REFERENCE–*** *FAAO JO 7110.65, Para 5-4-5, Transferring Controller Handoff* | No Change |

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| **(d)** If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied. | **(d)** If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied. |
| ***PHRASEOLOGY−*** *TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.* | ***PHRASEOLOGY−*** *(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.* |
| **(e)** Advise the pilots if the radar targets appear likely to merge. | **(e)** Advise the pilots if the targets appear likely to merge. |
| ***NOTE*** | No Change |
| ***EXAMPLE−*** *"Radar targets appear likely to merge."* | ***EXAMPLE−*** *"Targets appear likely to merge."* |
| **b.** TERMINAL. Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive. | **(f)** Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive. |
| ***REFERENCE*** | No Change |
| **c.** EN ROUTE. Visual separation may be used up to but not including FL 180 when the following conditions are met: | **b.** EN ROUTE. Visual separation may be used up to but not including FL 180 when the following conditions are met: |
| **1.** Direct communication is maintained with one of the aircraft involved and there is an ability to communicate with the other. | No Change |
| **2.** A pilot sees another aircraft and is instructed to maintain visual separation from it as follows: | No Change |
| **(a)** Tell the pilot about the other aircraft including position, direction and unless it is obvious, the other aircraft's intentions. | **(a)** Tell the pilot about the other aircraft including position, direction**, and type. If** it is **not** obvious, **include** the other aircraft's intentions. |
| Add | ***REFERENCE−*** *FAAO JO 7110.65, Para 2−1−21, Traffic Advisories.* |
| **(b)** Obtain acknowledgment from the pilot that the other aircraft is in sight. | No Change |
| **(c)** Instruct the pilot to maintain visual separation from that aircraft. | No Change |
| Add | ***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*** |
| Add | **(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.** |
| Add | ***PHRASEOLOGY−*** ***(ACID), APPROVED.*** |

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|---|---|
| Add | ***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.*** |
| **(d)** Advise the pilot if the radar targets appear likely to converge. | **(e)** Advise the pilot if the targets appear likely to converge. |
| **(e)** If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied. | **(f)** If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied. |
| Add | ***PHRASEOLOGY−*** ***(ACID) TRAFFIC, (clock position and distance), (direction)−BOUND, (type of aircraft), ON CONVERGING COURSE, HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.*** |
| Add | ***REFERENCE−*** *FAAO JO 7110.65, Para 7−4−1, Visual Approach.* *FAAO JO 7110.65, Para 7−4−2, Vectors for Visual Approach.* |
| **(f)** Advise the pilots if either aircraft is a heavy. | **(g)** Advise the pilots if either aircraft is a heavy. |
| **(g)** Traffic advisories and wake turbulence cautionary advisories must be issued in accordance with para 2−1−20, Wake Turbulence Cautionary Advisories, and para 2−1−21, Traffic Advisories. | **(h)** **Issue** wake turbulence cautionary advisories in accordance with para 2−1−20. |
| **(h)** If the pilot advises he/she has the traffic in sight and will maintain visual separation from it (the pilot must use that entire phrase), the controller need only “approve” the operation instead of restating the instructions. | Delete |

*PHRASEOLOGY−*
*TRAFFIC, (clock position and distance), (direction)−BOUND, (type of aircraft), (intentions and other relevant information).*

*If applicable,*

*ON CONVERGING COURSE.*

*DO YOU HAVE IT IN SIGHT?*

*If the answer is in the affirmative,*

*MAINTAIN VISUAL SEPARATION.*

*If the pilot advises he/she has the traffic in sight and will maintain visual separation from it (pilot must use that entire phrase):*

*(Call Sign) APPROVED.*

*If aircraft are on converging courses, advise the other aircraft:*

*TRAFFIC, (clock position and distance), (direction)−BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.*

Delete

*REFERENCE−*
*FAAO JO 7110.65, Para 7−4−1, Visual Approach.*
*FAAO JO 7110.65, Para 7−4−2, Vectors for Visual Approach.*

Delete

**d.** Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas provided other separation is assured before and after the application of visual separation. This may be applied by the nonapproach control tower providing the separation or by a pilot visually observing another aircraft and being instructed to maintain visual separation with that aircraft.

*PHRASEOLOGY−*
*VISUAL SEPARATION APPROVED BETWEEN (identification) AND (identification),*

*and for departing aircraft,*

*(departing/succeeding aircraft) RELEASED YOUR DISCRETION.*

**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. **T**he 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.*

Add

**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.**

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|---|---|
| Add | ***PHRASEOLOGY–*** ***VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED*** |
| ***NOTE–*** *Separation of IFR aircraft before and after application of visual separation is an IFR control function (Approach/ Departure/En Route). A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation is prescribed.* | ***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*** | No Change |

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**1. PARAGRAPH NUMBER AND TITLE:** 7-4-4. APPROACHES TO MULTIPLE RUNWAYS

**2. BACKGROUND:** Current procedures in FAA Order JO 7110.65, Paragraphs 7-4-4 c2 and c3 restrict controllers to use of radar vectors to achieve the required maximum 30-degree intercept to the final approach course. Advanced NextGen procedures provide a greater degree of course accuracy. However, current guidance does not permit their use with conventional and visual approach procedures while conducting approaches to multiple runways.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **7-4-4. APPROACHES TO MULTIPLE RUNWAYS** | **7-4-4. APPROACHES TO MULTIPLE RUNWAYS** |
| **Title** through **c2** | No Change |
| **(a)** Approved separation is provided until the aircraft are established on a heading which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and each aircraft has been issued and one pilot has acknowledged receipt of the visual approach clearance, and the other pilot has acknowledged receipt of the visual or instrument approach clearance. | **(a)** Approved separation is provided until the aircraft are**:** |
| Add | **(1) Established on a heading or established on a direct course to a fix or cleared on an RNAV/ instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,** |
| Add | **(2) Issued an approach clearance and one pilot has acknowledged receipt of a visual approach clearance, and,** |
| Add | **(3) The other pilot has acknowledged receipt of a visual or instrument approach clearance.** |
| ***NOTE*** **1** and **2** | No Change |

| OLD | NEW |
|---|---|
| Add | ***NOTE−*** <br> ***3. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.*** |
| ***REFERENCE−*** <br> *FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."* | No Change |
| **c2(b)** through **c3(c)** | No Change |
| **(d)** Each aircraft must be assigned headings which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees. | **(d)** Each aircraft must **either** be assigned a **heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure** which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees. |
| ***NOTE* 1** and **2** | No Change |
| Add | ***NOTE−*** <br> ***3. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.*** |
| ***REFERENCE−*** <br> *FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."* | No Change |
| **c4** | No Change |

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**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:** ADS-B In Trail Procedure (ITP) is an additional capability fully compatible with the existing Advanced Technologies and Ocean Procedures (ATOP) oceanic automation system. The ADS-B ITP is a pilot-requested procedure that utilizes existing ADS-B aircraft equipage and air traffic control capabilities to allow more flights to achieve their preferred vertical profiles, and thereby increases both capacity and efficiency in the oceanic domain. The ADS-B ITP was designed to improve service to appropriately equipped aircraft by allowing pilots to request an altitude change when the existing separation minima do not allow aircraft to climb or descend through the altitude of a blocking aircraft.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **8-7-3. LONGITUDINAL SEPARATION** | **8-7-3. LONGITUDINAL SEPARATION** |
| **Title** through **c2** | No Change |
| Add | **d. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:** |
| Add | **1. The ITP climb or descent has been requested by the pilot;** |

| | |
|---|---|
| Add | __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;__ |
| Add | __3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;__ |
| Add | __4. Both the ITP aircraft and reference aircraft are either on:__ |
| Add | **(a)** __same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or__ |
| Add | **(b)** __same tracks with no turns permitted during the ITP.__ |
| Add | ***NOTE−*** ***Same identical tracks are where the angular difference is zero degrees.*** |
| Add | __5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;__ |
| Add | __6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;__ |
| Add | __7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;__ |
| Add | __8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and__ |
| Add | __9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.__ |
| Add | ***NOTE−*** ***ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*** |
| __**d**__ | Re−Letter __**e**__ |

| OLD | NEW |
|---|---|
| **8-8-3. LONGITUDINAL SEPARATION** | **8-8-3. LONGITUDINAL SEPARATION** |
| **Title** through **d3** | No Change |
| Add | __**e.** Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:__ |
| Add | __1. The ITP climb or descent has been requested by the pilot;__ |
| Add | __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;__ |

| | |
|---|---|
| Add | **3.** **The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;** |
| Add | **4.** **Both the ITP aircraft and reference aircraft are either on:** |
| Add | **(a)** **same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or** |
| Add | **(b)** **Same tracks with no turns permitted during the ITP.** |
| Add | *NOTE−*<br>*Same identical tracks are where the angular difference is zero degrees.* |
| Add | **5.** **No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;** |
| Add | **6.** **The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;** |
| Add | **7.** **No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;** |
| Add | **8.** **The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and** |
| Add | **9.** **The ITP aircraft shall not be a reference aircraft in another ITP clearance.** |
| Add | *NOTE−*<br>*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.* |
| **e** | Renumber **f** |

| OLD | NEW |
|---|---|
| **8-9-3. LONGITUDINAL SEPARATION** | **8-9-3. LONGITUDINAL SEPARATION** |
| **Title** through **a4** | No Change |
| Add | **b.** **Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:** |
| Add | **1.** **The ITP climb or descent has been requested by the pilot;** |
| Add | **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;** |
| Add | **3.** **The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;** |

| | |
|---|---|
| Add | **4. Both the ITP aircraft and reference aircraft are either on:** |
| Add | **(a) Same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or** |
| Add | **(b) Same tracks with no turns permitted during the ITP.** |
| Add | *NOTE−*<br>*Same identical tracks are where the angular difference is zero degrees.* |
| Add | **5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;** |
| Add | **6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;** |
| Add | **7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;** |
| Add | **8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and** |
| Add | **9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.** |
| Add | *NOTE−*<br>*ATOP is designed to check for the above criteria prior to allowing the minima to be provided.* |
| **b** | Re−Letter **c** |

| OLD | NEW |
|---|---|
| **8-10-3. LONGITUDINAL SEPARATION** | **8-10-3. LONGITUDINAL SEPARATION** |
| **Title** through **a3** | No Change |
| Add | **b. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:** |
| Add | **1. The ITP climb or descent has been requested by the pilot;** |
| Add | **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;** |
| Add | **3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;** |
| Add | **4. Both the ITP aircraft and reference aircraft are either on:** |

| | |
|---|---|
| Add | (a) **same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or** |
| Add | (b) **same tracks with no turns permitted during the ITP.** |
| Add | ***NOTE−*** *Same identical tracks are where the angular difference is zero degrees.* |
| Add | **5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;** |
| Add | **6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;** |
| Add | **7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;** |
| Add | **8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and** |
| Add | **9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.** |
| Add | ***NOTE−*** ***ATOP is designed to check for the above criteria prior to allowing the minima to be provided.*** |
| **b** | Re−Letter **c** |

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**1. PARAGRAPH NUMBER AND TITLE:** 9-1-2. SPECIAL HANDLING

**2. BACKGROUND:** A GENOT was issued on May 11, 2015, regarding the call sign addition FLIGHT VAL. Activities associated with FAA authorized non-FAA Service Providers conducting Flight Validation (FV) activities are similar to Flight Check activities. The Flight Procedure Implementation and Oversight Branch (AFS-460) felt that additional information should be added to FAA Order JO 7110.65, para 9-1-2 to increase Air Traffic awareness and understanding of the level of activity required.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **9-1-2. SPECIAL HANDLING** | **9-1-2. SPECIAL HANDLING** |
| **Title** through **d** | No Change |

| | |
|---|---|
| ***NOTE−***<br>*FAA flight inspection aircraft will file flight plans using the call sign "FLIGHT CHECK" during flight inspections or when inbound to conduct flight inspections. Flight plan remarks may indicate type NAVAID inspection to be accomplished; e.g. "FC OKC P."* | ***NOTE−***<br>***<u>1.</u>*** *FAA flight inspection aircraft will file flight plans using the call sign "FLIGHT CHECK" during flight inspections or when inbound to conduct flight inspections. Flight plan remarks may indicate type NAVAID inspection to be accomplished; e.g. "FC OKC P."* |
| Add | ***<u>2. Authorized non-FAA Service Providers conducting Flight Validation activities use the call sign "FLIGHT VAL." Although these activities are similar to Flight Inspection activities, no additional priority is granted with this call sign.</u>*** |

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**1. PARAGRAPH NUMBER AND TITLE:** 10-2-13. MANPADS ALERT

**2. BACKGROUND:** Changes to reporting responsibilities and obsolete procedures have necessitated updates and clarifications to MANPADS paragraphs in FAA Order JO 7610.4, Special Operations; FAA Order JO 7210.3, Facility Operation and Administration; and FAA Order JO 7110.65, Air Traffic Control. The updates include requiring ATC facilities to report any MANPADS threat received to the the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC).

**3. CHANGE:**

| <u>OLD</u> | <u>NEW</u> |
|---|---|
| **10-2-13. MANPADS ALERT** | **10-2-13. MANPADS ALERT** |
| **Title** through **c** | No Change |
| **d.** Report MANPADS threat/attack/post–event activity until notified otherwise by <u>FAA national headquarters</u>. | **d.** Report MANPADS threat/attack/post–event activity **<u>via the ATIS and/or controller–to–pilot transmissions</u>** until notified otherwise by **<u>the Domestic Events Network (DEN) Air Traffic Security Coordinator (ATSC).</u>** |
| ***REFERENCE−***<br>*FAAO JO 7110.65, Para 2–9–3, Content.*<br>*FAAO JO 7210.3, Para 2–1–9, Handling MANPADS Incidents.* | ***REFERENCE−***<br>*FAAO JO 7110.65, Para 2–9–3, Content.*<br>*FAAO JO 7210.3, Para 2–1–9, Handling MANPADS Incidents.*<br>***<u>FAAO JO 7610.4, Para 16-1-3, Responsibilities.</u>*** |

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**1. PARAGRAPH NUMBER AND TITLE:**
11-1-1. DUTY RESPONSIBILITY
11-1-2. DUTIES AND RESPONSIBILITIES
11-1-3. TIME BASED FLOW MANAGEMENT (TBFM)

**2. BACKGROUND:** Traffic Management Advisor (TMA) was known as a comprehensive, automated method of planning efficient arrival trajectories from cruise altitude to the runway threshold. It increased situational awareness through its graphical displays, timelines, and load graphs. TMA trajectories have been optimized for each aircraft to permit an accurate estimated time of arrival at an airport and provide scheduled times of arrival (meter times) that optimize the flow of traffic into a terminal area. The next generation of TMA has begun. In this generation, all references to TMA have been changed, now referencing its new name: Time-Based Flow Management (TBFM).

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **11−1−1. DUTY RESPONSIBILITY** | **11−1−1. DUTY RESPONSIBILITY** |
| **Title** through **a** | No Change |
| Add | **b. TBFM must be used to the maximum extent feasible in preference to miles-in-trail initiatives.** |
| Add | ***NOTE−*** *The benefits of TBFM are best realized through the coordinated effort of all facilities supporting Performance Based Navigation procedures or Traffic Management Initiatives (TMIs).* |
| **b.** It is recognized that the ATCS is integral in the execution of the traffic management mission. | **c.** It is recognized that the ATCS is integral in the execution of the traffic management mission. |
| ***NOTE−*** *Complete details of traffic management initiatives and programs can be found in FAAO JO 7210.3, Facility Operation and Administration.* | No Change |

| OLD | NEW |
|---|---|
| **11−1−2. DUTIES AND RESPONSIBILITIES** | **11−1−2. DUTIES AND RESPONSIBILITIES** |
| **Title** through **a** | No Change |
| **1.** Ensure that an operational briefing is conducted at least once during the day and evening shifts. Participants must include, at a minimum, the STMCIC, Operations Supervisors (OS), Traffic Management Coordinator(s) (TMC), and other interested personnel as designated by facility management. Discussions at the meeting should include meteorological conditions (present and forecasted), staffing, equipment status, runways in use, AAR and traffic management initiatives (present and anticipated). | **1.** Ensure an operational briefing is conducted at least once during the day and evening shifts. Participants must include, at a minimum, the STMCIC, **Front Line Manager-in-Charge (FLMIC)/Controller-in-Charge (CIC)** and other interested personnel as designated by facility management. Discussions at the meeting should include meteorological conditions (present and forecasted), staffing, equipment status, runways in use, **Airport Arrival Rate** (AAR)**/Metering Parameters and Traffic Management Initiatives (TMIs)** (present and anticipated). |
| **a2** | No Change |
| **3.** Ensure that traffic management initiatives are carried out by Supervisory Traffic Management Coordinator−in−Charge (STMCIC). | **3.** Ensure that **TMIs** are carried out by **personnel providing traffic management services.** |
| **a4** and **a5** | No Change |
| **6.** Ensure changes to restrictions based on the Restrictions Inventory and Evaluation are implemented in a timely manner. | **6.** Ensure changes to restrictions**/metering** are implemented in a timely manner. |
| **b.** FLM must: | **b.** FLM**/CIC** must: |
| **b1** | No Change |
| **2.** Coordinate with the TMU and ATCSs to develop appropriate traffic management initiatives for sectors and airports in their area of responsibility. | **2.** Coordinate with the TMU and **personnel providing air traffic services** to develop appropriate **TMIs** for sectors and airports in their area of responsibility. |

**3.** Continuously review traffic management initiatives affecting their area of responsibility and coordinate with TMU for extensions, revisions, or cancellations.

**4.** Ensure that traffic management initiatives are carried out by ATCSs.

**b5** and **b6**

**7.** Ensure changes to restrictions based on the Restrictions Inventory and Evaluation are implemented in a timely manner.

**c.** ATCSs must:

**1.** Ensure that traffic management initiatives and programs are enforced within their area of responsibility. Traffic management initiatives and programs do not have priority over maintaining:

**c1(a)** and **c1(b)**

**2.** Keep the OS and TMU apprised of situations or circumstances that may cause congestion or delays.

**3.** Continuously review traffic management initiatives affecting their area of responsibility and coordinate with OS and TMU for extensions, revisions, or cancellations.

**c4** through **d**

**1.** Support TMA operations and monitor TMA equipment to improve situational awareness for a system approach to traffic management initiatives.

**d2** through **e**

**1.** Support TMA operations and monitor TMA equipment to improve situational awareness for a system approach to traffic management initiatives.

**e2** through **f**

**1.** Monitor TMA equipment to improve situational awareness for a system approach to traffic management initiatives.

**3.** Continuously review **TMIs** affecting their area of responsibility and coordinate with TMU for extensions, revisions, or cancellations.

**4.** Ensure that TMIs are carried out by personnel providing air traffic services.

No Change

**7.** Ensure changes to **TMIs** are implemented in a timely manner.

**c. Personnel providing air traffic services** must:

**1.** Ensure that **TMIs** are enforced within their area of responsibility. **TMIs** do not have priority over maintaining:

No Change

**2.** Keep the **FLM/CIC** and TMU apprised of situations or circumstances that may cause congestion or delays.

**3.** Continuously review **TMIs** affecting their area of responsibility and coordinate with **FLM/CIC** and TMU for extensions, revisions, or cancellations.

No Change

**1.** Support **TBFM** operations and monitor **TBFM** equipment to improve situational awareness for a system approach to **TMIs.**

No Change

**1.** Support **TBFM** operations and monitor **TBFM** equipment to improve situational awareness for a system approach to **TMIs.**

No Change

**1.** Monitor **TBFM** equipment to improve situational awareness for a system approach to **TMIs.**

**OLD**

**11–1–3. TIME BASED FLOW MANAGEMENT (TBFM)**

During periods of metering, ATCS must:

**a.** Display TMA schedule information on the main display monitor (MDM).

**b.** Comply with TMA-generated metering times within +/- 1 minute.

**NEW**

**11–1–3. TIME BASED FLOW MANAGEMENT (TBFM)**

During periods of metering, **personnel providing air traffic services** must:

**a.** Display **TBFM** schedule information on the main display monitor (MDM).

**b.** Comply with **TBFM**-generated metering times within +/- 1 minute.

| OLD | NEW |
|---|---|
| **1.** If TMA-generated metering time accuracy within +/- 1 minute cannot be used for specific aircraft due to significant jumps in the delay countdown timer (DCT), other traffic management initiatives may be used between those aircraft such as miles-in-trail (MIT) or minutes-in-trail (MINIT) to assist in delay absorption until stability resumes. | **1.** If **TBFM**-generated metering time accuracy within +/- 1 minute cannot be used for specific aircraft due to significant jumps in the delay countdown timer (DCT), other **TMIs** may be used between those aircraft such as miles-in-trail (MIT) or minutes-in-trail (MINIT) to assist in delay absorption until stability resumes. |
| **b2** | No Change |
| **c.** When compliance is not possible, coordinate with FLM and adjacent facilities/sectors as appropriate. | **c.** When compliance is not possible, coordinate with FLM**/CIC, personnel providing traffic management services,** and adjacent facilities/sectors as appropriate. |
| ***NOTE−*** *TMA accuracy of generated metering times is predicated on several factors, including vectoring outside of TMA route conformance boundaries (route recovery logic), certain trajectory ground speed calculations, and when TMU resequences a specific flight or flight list. Caution should be used in these situations to minimize impact on surrounding sector traffic and complexity levels, flight efficiencies, and user preferences.* | ***NOTE−*** ***TBFM*** *accuracy of generated metering times is predicated on several factors, including vectoring outside of* ***TBFM*** *route conformance boundaries (route recovery logic), certain trajectory ground speed calculations, and when TMU resequences a specific flight or flight list. Caution should be used in these situations to minimize impact on surrounding sector traffic and complexity levels, flight efficiencies, and user preferences.* |

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**1. PARAGRAPH NUMBER AND TITLE:** 13-1-9. ACKNOWLEDGEMENT OF AUTOMATED NOTIFICATION

**2. BACKGROUND:** In the Host Computer System, computer applied preferential routes (PARs, PDRs, PDARs) were developed to provide Air Traffic Control (ATC) directed preferred and/or mandated routes. The need for a controller to provide a modified clearance to an aircraft was provided by a "red route" or later a "highlighted route" on a flight strip. Only a single sector received this indication and it was expected the controller would issue the clearance or provide some alternative. En Route Decision Support Tool (EDST previously URET) introduced the concept of blue Embedded Route Text (ERT previously HERT) coding as a replacement for the red/highlighted indication on flight strips, and is integrated in En Route Automation Modernization (ERAM). Embedded Route Text (ERT) coding differs from previous method in that the ERT coding will show at every sector in the facility until the coding is acknowledged. However depending on facility settings, flight plans sent to other facilities could show the route merged; i.e., assumes that the ERT route has been issued. To function properly with the ERAM design, the acknowledgement of the ERT coding needs to be done in a timely manner. This is especially true to support terminal ARTS/STARS and FDIO processing.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **13-1-9. ACKNOWLEDGEMENT OF AUTOMATED NOTIFICATION** | **13-1-9. ACKNOWLEDGEMENT OF AUTOMATED NOTIFICATION** |
| **Title** through **e** | No Change |

| | |
|---|---|
| **f.** Send/acknowledge Host Embedded Route Text (HERT) coding only after the appropriate clearance has been issued to the pilot or otherwise coordinated. Do not send/acknowledge HERT unless the sector has track control for the flight or it has been otherwise coordinated. | **f. The first sector which displays Embedded Route Text (ERT) coding must issue and send/acknowledge the route prior to initiating a hand-off unless verbally coordinated or as specified in appropriate facility directives.** Do not send/acknowledge **ERT coding** unless the sector has track control for the flight or it has been otherwise coordinated. |
| **g.** Remove ATC Preferred Route (APR) coding only after the route has been checked and any required action has been completed. Do not remove APR coding unless the sector has track control or it has been otherwise coordinated. | **g.** Route **Action Notifications (RAN) such as ATC preferred routes or route processing errors must be amended at the first control position that displays the RAN unless verbally coordinated or as specified in appropriate facility directives.** Do not remove **RAN** coding unless the sector has track control or it has been otherwise coordinated. |

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**1. PARAGRAPH NUMBER AND TITLE:**
Appendix A - Aircraft Information Fixed-Wing Aircraft
Appendix B - Aircraft Information Helicopters/Rotorcrafts
Appendix C - Aircraft Information Specific Amateur−Built/Experimental Aircraft

**2. BACKGROUND:** The International Civil Aviation Organization (ICAO) formulates aircraft type designators for the world's aircraft that will most likely receive air traffic services. ICAO provides this information through ICAO Document 8643, Aircraft Type Designators, which is updated at least annually. FAA supplements the ICAO information and publishes it through two documents: FAA Order JO 7340.2, Contractions, and FAA Order JO 7110.65, Air Traffic Control. These FAA documents didn't contain all the aircraft listed by ICAO and the FAA documents contained dissimilar information.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **Appendix A - Aircraft Information Fixed-Wing Aircraft** | Delete Entire Appendix |
| **OLD** | **NEW** |
| **Appendix B - Aircraft Information Helicopters/ Rotorcrafts** | Delete Entire Appendix |
| **OLD** | **NEW** |
| **Appendix C - Aircraft Information Specific Amateur−Built/Experimental Aircraft** | Delete Entire Appendix |
| **OLD** | **NEW** |
| **Appendix D − Standard Operating Practice (SOP) for the Transfer of Position Responsibility** | **Appendix A − Standard Operating Practice (SOP) for the Transfer of Position Responsibility** |

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