**CHANGE**

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

**JO 7110.65BB**
**CHG 2**

**Effective Date:**
January 22, 2026

**SUBJ:** Air Traffic Control

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

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

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

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

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

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 Retain this transmittal until superseded by a new basic order.

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

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Christopher A. Wilbanks
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# Explanation of Changes
# Change 2

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

**a. 1–2–6. ABBREVIATIONS**
**3–9–2. DEPARTURE DELAY INFORMATION**
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**14–2–1. GENERAL**
**14–2–2. ABNORMAL SITUATIONS**
**14–2–3. SYSTEM SITUATIONS**
**14–2–4. SPECIFIC UPLINKS**

This change adds new abbreviations and updates paragraph references to FAA Order JO 7210.3 in multiple paragraphs. It creates a new Chapter 14, including TBL 14–2–1 through TBL 14–2–23 and TBL 14–3–1 through TBL 14–3–26, that moves the information from, and effects the cancellation of, FAA Order JO 7110.125 and FAA Order JO 7110.113. Table columns have been reduced and language updated for clarity.

**b. 1–2–6. ABBREVIATIONS**
**9–8–1. GENERAL**

This change to paragraph 1−2−6 replaces the abbreviation of unidentified flying object (UFO) with unidentified anomalous phenomena (UAP). This change retitles Section 8 of Chapter 9. This change to paragraph 9−8−1 deletes obsolete information and adds a requirement to inform the supervisor/CIC of any reported or observed UAP activity. In addition, a reference to FAA Order JO 7210.3, paragraph 4−7−4, is added. This change cancels and incorporates N JO 7110.800, which was effective October 26, 2025.

**c. 1–2–6. ABBREVIATIONS**
**10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)**

This change introduces the use of the Emergency Altitude Map (EAM) for the en route domain. This change cancels and incorporates N JO 7110.799, which was effective October 10, 2025.

**d. 2–2–6. IFR FLIGHT PROGRESS DATA**
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**6–1–5. ARRIVAL MINIMA**
**6–7–5. INTERVAL MINIMA**
**7–4–3. CLEARANCE FOR VISUAL APPROACH**
**7–6–7. SEQUENCING**

The contents of FAA Order JO 7110.126, Consolidated Wake Turbulence (CWT), have been incorporated into FAA Order JO 7110.65, Air Traffic Control. At this time, the applicability of this change is the terminal air traffic facility. En route air traffic facilities will continue to use the legacy standards as currently published. Upon publication of this change, FAA Order JO 7110.126B is canceled.

**e. 2–6–4. ISSUING WEATHER AND CHAFF AREAS**

This change removes "Air Route Surveillance Radar (ARSR)" from subparagraph g.

**f. 3–9–6. SAME RUNWAY SEPARATION**
**3–10–3. SAME RUNWAY SEPARATION**
**3–10–11. CLOSED TRAFFIC**
**3–11–1. TAXI AND GROUND MOVEMENT OPERATION**
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**7–8–6. EXCEPTIONS**
**7–9–4. SEPARATION**
**7–9–6. HELICOPTER TRAFFIC**
**7–9–7. ALTITUDE ASSIGNMENTS**

This change adds the terms powered-lift, vertiport, and vertipad to multiple paragraphs. Additionally, this change removes four notes pertaining to 14 CFR § 91.119, Minimum Safe Altitudes, replacing and ensuring that applicable references exist. The language pertaining to the V–22 Osprey in paragraph 7–9–4, Separation, will be removed as the V–22 will be designated as a powered-lift aircraft. Additional changes to the Pilot/Controller Glossary (P/CG) and FAA Order JO 7360.1, Aircraft Type Designators, will also be made. This change cancels and incorporates N JO 7110.797, which was effective October 1, 2025.

**g. 3–10–5. LANDING CLEARANCE**
**5–14–9. APPROACH RUNWAY VERIFICATION (ARV)**

This change adds a reference to paragraph 3–10–5 and a new paragraph 5–14–9 to provide guidance on ARV alerts in the Standard Terminal Automation Replacement System (STARS) automation platform. These new procedures require controllers to evaluate the received ARV alert and take appropriate action or coordination as needed.

**h. 4–5–7. ALTITUDE INFORMATION**

This change instructs controllers to restate the climb or descend via clearance after an aircraft has been cleared to deviate, is vectored, or has been cleared direct to a downstream waypoint or fix on the procedure. Notes are added to clarify the guidance. Phraseology examples are modified.

**i. 4–8–6. CIRCLING APPROACH**

This change adds language to a note aligning with Flight Standards language concerning clearances and circling area restrictions published on approach plates.

**j. Editorial Changes**

Editorial changes include correcting the title of FIG 4–8–7; removing the underline between the words “traffic” and “resolution” in subparagraph 2–6–4j; updating FIG 2–3–2; and renaming FIG 3−9−14 through FIG 3−9−18.

**k. Entire publication**

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

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# Appendices

***NOTE–***
*The term "protected airspace," as used in this paragraph, is the airspace equal to one half the required applicable lateral separation on either side of an aircraft along its projected flight path. If the protected airspace of two aircraft does not overlap, applicable lateral separation is ensured.*

**a.** *SAME COURSES* are courses whose protected airspaces are coincident, overlap, or intersect and whose angular difference is less than 45 degrees. (See FIG 1–2–1.)

**b.** *CROSSING COURSES* are intersecting courses whose angular difference is 45 through 135 degrees inclusive. (See FIG 1–2–1.)

**c.** *OPPOSITE/RECIPROCAL COURSES* are courses whose protected airspaces are coincident, overlap, or intersect and whose angular difference is greater than 135 degrees through 180 degrees inclusive. (See FIG 1–2–1.)

## 1–2–3. NOTES

Statements of fact, or of a prefatory or explanatory nature relating to directive material, are set forth as notes.

## 1–2–4. REFERENCES

As used in this order, references direct attention to an additional or supporting source of information such as FAA, NWS, and other agencies' orders, directives, notices, CFRs, and Advisory Circulars (ACs).

## 1–2–5. ANNOTATIONS

Revised, reprinted, or new pages are marked as follows:

**a.** The change number and the effective date are printed on each revised or additional page.

**b.** A page that does not require a change is reprinted in its original form.

**c.** Bold vertical lines in the margin of changed pages indicate the location of substantive revisions to the order. Bold vertical lines adjacent to the title of a chapter, section, or paragraph means that extensive changes have been made to that chapter, section, or paragraph.

**d.** Paragraphs/sections annotated with *EN ROUTE, OCEANIC,* or *TERMINAL* are only to be applied by the designated type facility. When they are not so designated, the paragraphs/sections apply to all types of facilities (en route, oceanic, and terminal).

**e.** The annotation, *USAF* for the U.S. Air Force, *USN* for the U.S. Navy, and *USA* for the U.S. Army denotes that the procedure immediately following the annotation applies only to the designated service.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–12, Military Procedures.*

**f. WAKE TURBULENCE APPLICATION** inserted within a paragraph means that the remaining information in the paragraph requires the application of wake turbulence procedures.

**g.** The annotation ***PHRASEOLOGY*** denotes the prescribed words and/or phrases to be used in communications.

***NOTE–***
*Controllers may, after first using the prescribed phraseology for a specific procedure, rephrase the message to ensure the content is understood. Good judgment must be exercised when using nonstandard phraseology.*

**h.** The annotation ***EXAMPLE*** provides a sample of the way the prescribed phraseology associated with the preceding paragraph(s) will be used. If the preceding paragraph(s) does (do) not include specific prescribed phraseology, the ***EXAMPLE*** merely denotes suggested words and/or phrases that may be used in communications.

***NOTE–***
*The use of the exact text contained in an example not preceded with specific prescribed phraseology is not mandatory. However, the words and/or phrases are expected, to the extent practical, to approximate those used in the example.*

## 1–2–6. ABBREVIATIONS

As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1–2–1.)

*TBL 1–2–1*

**FAA Order JO 7110.65 Abbreviations**

| Abbreviation | Meaning |
|---|---|
| AAO . . . . . | Adverse Assumption Obstacle |
| AAR . . . . . | Adapted arrival route |
| AAR . . . . . | Airport arrival rate |
| AC . . . . . | Advisory Circular |
| ACC . . . . . | Area Control Center |
| ACE–IDS . . . | ASOS Controller Equipment– Information Display System |
| ACL . . . . . | Aircraft list |
| ACLS . . . . . | Automatic Carrier Landing System |
| ADAR . . . . . | Adapted departure arrival route |
| ADC . . . . . | Aerospace Defense Command |
| ADIZ . . . . . | Air Defense Identification Zone (to be pronounced “AY DIZ”) |
| ADR . . . . . | Adapted departure route |
| ADS . . . . . | Automatic Dependent Surveillance |
| ADS–B . . . . . | Automatic Dependent Surveillance–Broadcast |
| ADS–C . . . . . | Automatic Dependent Surveillance–Contract |
| AFP . . . . . | Airspace Flow Program |
| AIDC . . . . . | ATS Interfacility Data Communications |
| AIM . . . . . | Aeronautical Information Manual |
| AIRMET . . . | Airmen’s meteorological information |
| ALDARS . . . | Automated Lightning Detection and Reporting System |
| ALERFA . . . | Alert phase code (Alerting Service) |
| ALNOT . . . . | Alert notice |
| ALS . . . . . | Approach Light System |
| ALTRV . . . . . | Altitude reservation |
| AM . . . . . | Ambiguity–A disparity greater than a locally adapted distance exists between the position declared for a target by MEARTS and another facility’s computer declared position during interfacility handoff |
| AMASS . . . . | Airport Movement Area Safety System |
| AMB . . . . . | Ambiguity–A disparity greater than a locally adapted distance exists between the position declared for a target by STARS and another facility’s computer declared position during interfacility handoff |
| AMVER . . . . | Automated Mutual Assistance Vessel Rescue System |
| ANG . . . . . | Air National Guard |

| Abbreviation | Meaning |
|---|---|
| APR . . . . . | ATC preferred route |
| APREQ . . . . | Approval Request |
| ARAC . . . . . | Army Radar Approach Control facility (US Army) |
| ARINC . . . . . | Aeronautical Radio Incorporated |
| ARIP . . . . . | Air refueling initial point |
| ARSR . . . . . | Air route surveillance radar |
| ARTCC . . . . . | Air Route Traffic Control Center |
| ASD . . . . . | Aircraft Situation Display |
| ASDE . . . . . | Airport surface detection equipment |
| ASDE–X . . . | Airport Surface Detection Equipment System – Model X |
| ASF . . . . . | Airport Stream Filters |
| ASOS . . . . . | Automated Surface Observing System |
| ASR . . . . . | Airport surveillance radar |
| ASSC . . . . . | Airport Surface Surveillance Capability |
| ATC . . . . . | Air traffic control |
| ATCAA . . . . | ATC assigned airspace |
| ATCSCC . . . . | David J. Hurley Air Traffic Control System Command Center |
| ATD . . . . . | Along–Track Distance |
| ATIS . . . . . | Automatic Terminal Information Service |
| ATO . . . . . | Air Traffic Organization |
| ATO COO . . | Air Traffic Organization Chief Operating Officer |
| ATOP . . . . . | Advanced Technologies and Oceanic Procedures |
| ATS . . . . . | Air Traffic Service |
| AWOS . . . . . | Automated Weather Observing System |
| BASE . . . . . | Cloud base |
| CA . . . . . | Conflict Alert |
| CAA . . . . . | Confirm assigned altitude |
| CARCAH . . . | Chief, Aerial Reconnaissance Coordination, All Hurricanes |
| CARF . . . . . | Central Altitude Reservation Function |
| CAT . . . . . | Clear air turbulence |
| CDT . . . . . | Controlled departure time |
| CEP . . . . . | Central East Pacific |
| CERAP . . . . . | Combined Center/RAPCON |
| CFR . . . . . | Code of Federal Regulations |

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

| 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 |
| NAT HLA . . . | North Atlantic High Level Airspace |
| NBCAP . . . . | National Beacon Code Allocation Plan |
| NDB . . . . . | Nondirectional radio beacon |
| NHOP . . . . . | National Hurricane Operations Plan |
| NM . . . . . | Nautical mile |
| NOAA . . . . . | National Oceanic and Atmospheric Administration |
| NOPAC . . . . | North Pacific |
| NORAD . . . . | North American Aerospace Defense Command |

| 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 Season Operations Plan |
| ODALS . . . . | Omnidirectional Approach Lighting System |
| ODP . . . . . | Obstacle Departure Procedure |
| OID . . . . . | Operator Interface Device |
| OMIC . . . . . | Operations Manager-in-Charge |
| OS . . . . . | Operations Supervisor |
| OTR . . . . . | Oceanic transition route |
| PAPI . . . . . | Precision Approach Path Indicators |
| PAR . . . . . | Precision approach radar |
| PBCT . . . . . | Proposed boundary crossing time |
| P/CG . . . . . | Pilot/Controller Glossary |
| PDC . . . . . | Pre-Departure Clearance |
| PID . . . . . | Pilot initiated downlink |
| PIREP . . . . . | Pilot Weather Report |
| PPI . . . . . | Plan position indicator |
| PTP . . . . . | Point-to-point |
| PVD . . . . . | Plan view display |
| RA . . . . . | Radar Associate |
| RAIL . . . . . | Runway alignment indicator lights |
| RAPCON . . . | Radar Approach Control facility (USAF, USN, and USMC) |
| RATCF . . . . . | Radar Air Traffic Control Facility (USN and USMC) |
| RBS . . . . . | Radar bomb scoring |
| RCC . . . . . | Rescue Coordination Center |
| RCLS . . . . . | Runway Centerline System |
| RCR . . . . . | Runway condition reading |
| RE . . . . . | Recent (used to qualify weather phenomena such as rain, e.g., recent rain = RERA) |
| REIL . . . . . | Runway end identifier lights |
| RF . . . . . | Radius–to–Fix |
| RNAV . . . . . | Area navigation |

| Abbreviation | Meaning |
|---|---|
| RNP . . . . . | Required Navigation Performance |
| RTQC . . . . . | Real–Time Quality Control |
| RVR . . . . . | Runway visual range |
| RVSM . . . . . | Reduced Vertical Separation Minimum |
| RwyCC . . . . . | Runway Condition Codes |
| RwyCR . . . . . | Runway Condition Report |
| SAA . . . . . | Special Activity Airspace |
| 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 |
| TAC . . . . . | Trajectory altering clearance |
| 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 |
| TF . . . . . | Track-to-Fix |
| TFMS . . . . . | Traffic Flow Management System |
| TMC . . . . . | Traffic Management Coordinator |
| TMU . . . . . | Traffic Management Unit |
| TO . . . . . | Technical Operations |
| TOC . . . . . | Transfer of communication |
| TRACON . . . | Terminal Radar Approach Control |
| TRSA . . . . . | Terminal radar service area |
| UAP . . . . . | Unidentified anomalous phenomena |
| UHF . . . . . | Ultra high frequency |
| 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 |
| VCI . . . . . | Voice Communication Indicator |
| 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 |
| WATRS . . . . . | West Atlantic Route System |
| WRA . . . . . | Weather Reconnaissance Area |
| WSO . . . . . | Weather Service Office |
| WSP . . . . . | Weather System Processor |
| WST . . . . . | Convective SIGMET |

# Section 2. Flight Plans and Control Information

## 2–2–1. RECORDING INFORMATION

**a.** Record flight plan information required by the type of flight plan and existing circumstances. Use authorized abbreviations when possible.

***NOTE–***
*Generally, all military overseas flights are required to clear through a specified military base operations office (BASOPS). Pilots normally will not file flight plans directly with an FAA facility unless a BASOPS is not available. BASOPS will, in turn, forward the IFR flight notification message to the appropriate center.*

**b.** *EN ROUTE.* When flight plans are filed directly with the center, record all items given by the pilot either on a flight progress strip/flight data entry or on a voice recorder. If the latter, enter in box 26 of the initial flight progress strip the sector or position number to identify where the information may be found in the event search and rescue (SAR) activities become necessary.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–3–2, En Route Data Entries.*

## 2–2–2. FORWARDING INFORMATION

**a.** Except during EAS FDP operation, forward the flight plan information to the appropriate ATC facility, FSS, or BASOPS and record the time of filing and delivery on the form.

**b.** *EN ROUTE.* During EAS FDP operation, the above manual actions are required in cases where the data is not forwarded automatically by the computer.

***NOTE–***
*During EAS FDP operation, data is exchanged between interfaced automated facilities and both the data and time of transmission are recorded automatically.*

**c.** *EN ROUTE.* Forward proposed tower en route flight plans and any related amendments to the appropriate departure terminal facility.

## 2–2–3. FORWARDING VFR DATA

*TERMINAL*

Forward aircraft departure times to FSSs or military operations offices when they have requested them. Forward other VFR flight plan data only if requested by the pilot.

## 2–2–4. MILITARY DVFR DEPARTURES

*TERMINAL*

Forward departure times on all DVFR departures from joint-use airports to the military operations office.

***NOTE–***
**1.** *Details for handling air carrier and nonscheduled civil DVFR flight data are contained in FAA Order JO 7610.4, Sensitive Procedures and Requirements for Special Operations.*

**2.** *Civil pilots departing DVFR from a joint-use airport will include the phrase "DVFR to (destination)" in their initial call-up to an FAA-operated tower.*

## 2–2–5. IFR TO VFR FLIGHT PLAN CHANGE

Request a pilot to contact the appropriate FSS if the pilot informs you of a desire to change from an IFR to a VFR flight plan.

## 2–2–6. IFR FLIGHT PROGRESS DATA

Forward control information from controller to controller within a facility, then to the receiving facility as the aircraft progresses along its route. Where appropriate, use computer equipment in lieu of manual coordination procedures. Do not use the remarks section of flight progress strips in lieu of voice coordination to pass control information. Ensure that flight plan and control information is correct and up-to-date. When covered by a letter of agreement/facility directive, the time requirements of subparagraph a may be reduced, and the time requirements of subparagraph b1 and paragraph 2–2–11, Forwarding Amended and UTM Data, subparagraph a may be increased up to 15 minutes when facilitated by automated systems or mandatory radar handoffs; or if operationally necessary because of manual data processing or nonradar operations, the time requirements of subparagraph a may be increased.

***NOTE–***

**1.** *The procedures for preparing flight plan and control information related to altitude reservations (ALTRVs) are contained in FAA Order JO 7210.3, paragraph 8–1–2, Facility Operation and Administration, ALTRV Flight Data Processing. Development of the methods for assuring the accuracy and completeness of ALTRV flight plan and control information is the responsibility of the military liaison and security officer.*

**2.** *The term facility in this paragraph refers to centers and terminal facilities when operating in an en route capacity.*

**a.** Forward the following information at least 15 minutes before the aircraft is estimated to enter the receiving facility's area:

**1.** Aircraft identification.

**2.** Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix.

**3.** Assigned altitude and ETA over last reporting point/fix in transferring facility's area or assumed departure time when the departure point is the last point/fix in the transferring facility's area.

**4.** Altitude at which aircraft will enter the receiving facility's area if other than the assigned altitude.

**5.** True airspeed.

**6.** Point of departure.

**7.** Route of flight remaining.

**8.** Destination airport and clearance limit if other than destination airport.

**9.** ETA at destination airport (not required for military or scheduled air carrier aircraft).

**10.** Altitude requested by the aircraft if assigned altitude differs from requested altitude (within a facility only).

***NOTE–***

*When an aircraft has crossed one facility's area and assignment at a different altitude is still desired, the pilot will reinitiate the request with the next facility.*

***REFERENCE–***

*FAA Order JO 7110.65, Para 4–5–8, Anticipated Altitude Changes.*

**11.** When flight plan data must be forwarded manually and an aircraft has been assigned a beacon code by the computer, include the code as part of the flight plan.

***NOTE–***

*When an airborne aircraft that has been assigned a beacon code by the ARTCC computer and whose flight plan will terminate in another facility's area cancels ATC service, appropriate action should be taken to remove flight plan information on that aircraft.*

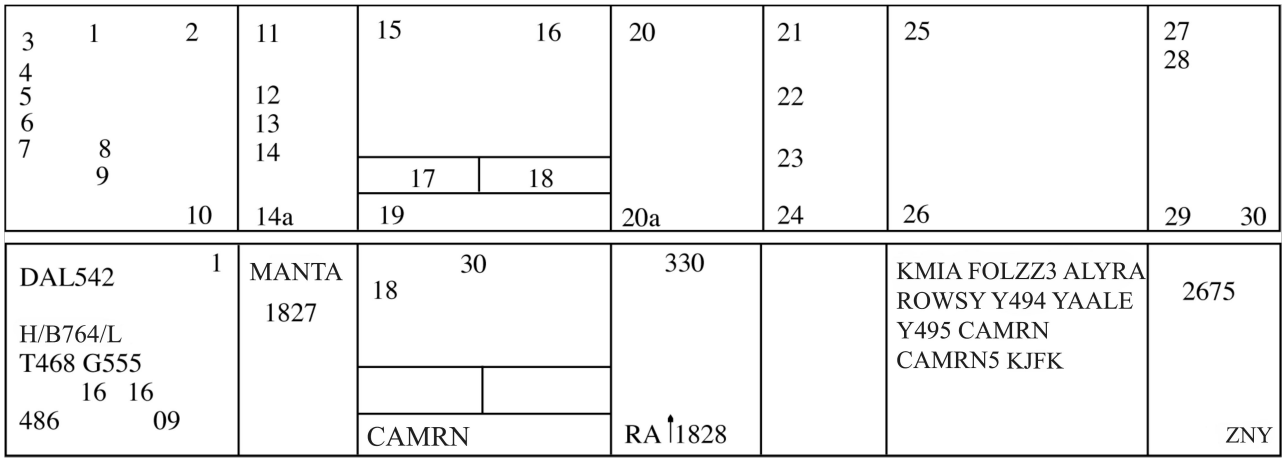
***REFERENCE–***

*FAA Order JO 7110.65, Para 2–2–11, Forwarding Amended and UTM Data.*

**12.** Longitudinal separation being used in nonradar operations between aircraft at the same altitude if it results in these aircraft having less than 10 minutes separation at the facilities' boundary, unless (otherwise) specified in a Letter of Agreement (LOA).

## 2–3–2. EN ROUTE DATA ENTRIES

*FIG 2–3–2*
**Flight Progress Strip**
**(7230–19)**




**a.** Information recorded on the flight progress strips (FAA Forms 7230–19) must be entered in the correspondingly numbered spaces:

*TBL 2–3–1*

| Block | Information Recorded |
|---|---|
| 1. | Verification symbol if required. |
| 2. | Revision number.<br>DSR–Not used. |
| 3. | Aircraft identification. |
| 4. | Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix. |
| 5. | Filed true airspeed. |
| 6. | Sector number. |
| 7. | Computer identification number if required. |
| 8. | Estimated ground speed. |
| 9. | Revised ground speed or strip request (SR) originator. |
| 10. | Strip number.<br>DSR– Strip number/Revision number. |
| 11. | Previous fix. |
| 12. | Estimated time over previous fix. |
| 13. | Revised estimated time over previous fix. |
| 14. | Actual time over previous fix, or actual departure time entered on first fix posting after departure. |

| Block | Information Recorded |
|---|---|
| 14a. | Plus time expressed in minutes from the previous fix to the posted fix. |
| 15. | Center-estimated time over fix (in hours and minutes), or clearance information for departing aircraft. |
| 16. | Arrows to indicate if aircraft is departing (↑) or arriving (↓). |
| 17. | Pilot-estimated time over fix. |
| 18. | Actual time over fix, time leaving holding fix, arrival time at nonapproach control airport, or symbol indicating cancellation of IFR flight plan for arriving aircraft, or departure time (actual or assumed). |
| 19. | Fix. For departing aircraft, add proposed departure time. |
| 20. | Altitude information (in hundreds of feet) or as noted below. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e., FL 330 as 33, 5,000 feet as 5, and 2,800 as 2.8.* |

| Block | Information Recorded |
|---|---|
| 20a. | **OPTIONAL USE,** when voice recorders are operational;<br>**REQUIRED USE,** when the voice recorders are not operating and strips are being use at the facility. This space is used to record reported RA events. The letters RA followed by a climb or descent arrow (if the climb or descent action is reported) and the time (hhmm) the event is reported. |
| 21. | Next posted fix or coordination fix. |
| 22. | Pilot's estimated time over next fix. |
| 23. | Arrows to indicate north (↑), south (↓), east (→), or west (←) direction of flight if required. |
| 24. | Requested altitude. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e., FL 330 as 33, 5,000 feet as 5, and 2,800 as 2.8.* |

| Block | Information Recorded |
|---|---|
| 25. | Point of origin, route as required for control and data relay, and destination. |
| 26. | Pertinent remarks, minimum fuel, point out/radar vector/speed adjustment information or sector/position number (when applicable in accordance with paragraph 2–2–1, Recording Information), or NRP. |
| 27. | Mode 3/A beacon code if applicable. |
| 28. | Miscellaneous control data (expected further clearance time, time cleared for approach, etc.). |
| 29–30. | Transfer of control data and coordination indicators. |

**b.** Latitude/longitude coordinates may be used to define waypoints and may be substituted for nonadapted NAVAIDs in space 25 of domestic en route flight progress strips provided it is necessary to accommodate a random RNAV or GNSS route request.

**c.** Facility air traffic managers may authorize the optional use of spaces 13, 14, 14a, 22, 23, 24, and 28 for point out information, radar vector information, speed adjustment information, or transfer of control data.

## 2–3–3. OCEANIC DATA ENTRIES

*FIG 2–3–3*

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1<br>3<br>5 | 2<br>4<br>6 | 7<br>8<br>9 | 10<br><br>11 | 12<br><br>13 | 14<br><br>15 | 16<br><br>17 | 16<br><br>17 | 18<br>19<br>20 | 21<br>21<br>24 |
| 22<br>23 | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 10000<br>DAL210<br>KZ | B763<br>M<br>M080 | 22 of 70 A | F370 | BOS<br><br>0820 | ACK<br><br>0820 | TUK<br><br>0831 | LACKS<br><br>0846 | SLATN<br><br>0856 | KBOS<br>TXKF<br>R | KZ<br>C<br>70<br>87<br>1 of 2 |
| | | | | | | | | | |

**a.** The ATOP system displays information on electronic flight progress strips and, in the event of a catastrophic system failure, will print flight progress strips with data in the corresponding numbered spaces:

*TBL 2–3–2*

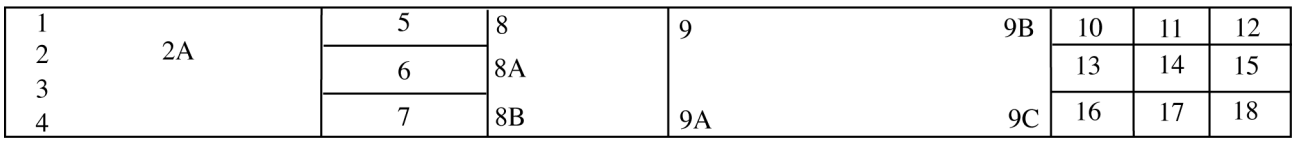
| Block | Information Recorded |
|---|---|
| 1. | Mode 3/A beacon code, if applicable. |
| 2. | Number of aircraft, if more than one, and type of aircraft. |
| 3. | Aircraft identification. |
| 4. | Reduced separation flags.<br>Indicators are available for:<br>M – Mach Number Technique (MNT),<br>R – Reduced MNT,<br>D or 3 – Distance–based longitudinal separation using 50 NM (D) or 30 NM (3), and<br>W– Reduced Vertical Separation Minimum (RVSM).<br>These flags are selectable for aircraft whose flight plans contain the required equipment qualifiers for each separation criteria. |
| 5. | Controlling sector number. |
| 6. | Filed airspeed or assigned Mach number/True airspeed. |
| 7. | Reported flight level. May contain an indicator for a flight that is climbing (↑) or descending (↓). Reports from Mode C, ADS or position reports are displayed in that order of preference. |
| 8. | Cleared flight level. May contain an indicator for a future conditional altitude ( * ) that cannot be displayed. |
| 9. | Requested flight level, if applicable. |
| 10. | Previously reported position. |
| 11. | Actual time over previously reported position. |
| 12. | Last reported position. |
| 13. | Actual time over last reported position. |
| 14. | Next reporting position. |
| 15. | In–conformance pilot's estimate or controller–accepted pilot's estimate for next reporting position. |
| 16. | Future reporting position(s). |
| 17. | System estimate for future reporting position(s). |
| 18. | Departure airport or point of origin. |
| 19. | Destination airport or filed point of flight termination. |
| 20. | Indicators. Indicators and toggles for displaying or suppressing the display of the route of flight (F), second flight profile (2), radar contact (A), annotations (&), degraded Required Navigation Performance (RNP, indicator R) and clearance restrictions (X). |
| 21. | Coordination indicator(s). |
| 22. | Annotations. |
| 23. | Clearance restrictions and conditions (may be multiple lines). |
| 24. | Strip number and total number of strips (printed strips only). |

**b.** Standard annotations and abbreviations for Field 22 may be specified by facility directives.

## 2–3–4. TERMINAL DATA ENTRIES

**a.** Arrivals: Information recorded on the flight progress strips (FAA Forms 7230–7.1, 7230–7.2, and 7230–8) must be entered in the correspondingly numbered spaces. Facility managers can authorize omissions and/or optional use of spaces 2A, 8A, 8B, 9A, 9B, 9C, and 10–18, if no misunderstanding will result. These omissions and/or optional uses must be specified in a facility directive.

*FIG 2–3–4*



*TBL 2−3−3*

| Block | Information Recorded |
|---|---|
| 1. | Aircraft identification. |
| 2. | Revision number (FDIO locations only). |
| 2A. | Strip request originator. (At FDIO locations this indicates the sector or position that requested a strip be printed.) |
| 3. | Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix. |
| 4. | Computer identification number if required. |
| 5. | Secondary radar (beacon) code assigned. |
| 6. | (FDIO Locations.) The previous fix will be printed.<br>(Non-FDIO Locations.) Use of the inbound airway. This function is restricted to facilities where flight data is received via interphone when agreed upon by the center and terminal facilities. |
| 7. | Coordination fix. |
| 8. | Estimated time of arrival at the coordination fix or destination airport. |
| 8A. | **OPTIONAL USE.** |
| 8B. | **OPTIONAL USE,** when voice recorders are operational;<br>**REQUIRED USE,** when the voice recorders are not operating and strips are being used at the facility. This space is used to record reported RA events when the voice recorders are not operational and strips are being used at the facility. The letters RA followed by a climb or descent arrow (if the climb or descent action is reported) and the time (hhmm) the event is reported. |
| 9. | Altitude (in hundreds of feet) and remarks. |
| ***NOTE−*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i. e., FL 230 as 23, 5,000 feet as 5, and 2,800 as 2.8.* |
| 9A. | Minimum fuel, destination airport/point out/ radar vector/speed adjustment information. Air traffic managers may authorize in a facility directive the omission of any of these items, **except minimum fuel,** if no misunderstanding will result. |
| ***NOTE−*** | *Authorized omissions and optional use of spaces must be specified in the facility directive concerning strip marking procedures.* |
| 9B. | **OPTIONAL USE.** |
| 9C. | **OPTIONAL USE.** |
| 10−18. | Enter data as specified by a facility directive. Radar facility personnel need not enter data in these spaces except when nonradar procedures are used or when radio recording equipment is inoperative. |

**b.** Departures: Information recorded on the flight progress strips (FAA Forms 7230−7.1, 7230−7.2, and 7230−8) must be entered in the correspondingly numbered spaces. Facility managers can authorize omissions and/or optional use of spaces 2A, 8A, 8B, 9A, 9B, 9C, and 10−18, if no misunderstanding will result. These omissions and/or optional uses must be specified in a facility directive.

*FIG 2−3−5*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 8 | 9 | 9B | 10 | 11 | 12 |
| 2 2A | 6 | 8A | | | 13 | 14 | 15 |
| 3 | | | | | | | |
| 4 | 7 | 8B | 9A | 9C | 16 | 17 | 18 |

*TBL 2–3–4*

| Block | Information Recorded |
|---|---|
| 1. | Aircraft identification. |
| 2. | Revision number (FDIO locations only). |
| 2A. | Strip request originator. (At FDIO locations this indicates the sector or position that requested a strip be printed.) |
| 3. | Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix. |
| 4. | Computer identification number if required. |
| 5. | Secondary radar (beacon) code assigned. |
| 6. | Proposed departure time. |
| 7. | Requested altitude. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i. e., FL 230 as 23, 5,000 feet as 5, and 2,800 as 2.8.* |
| 8. | Departure airport. |
| 8A. | **OPTIONAL USE.** |
| 8B. | **OPTIONAL USE**, when voice recorders are operational;<br>**REQUIRED USE,** when the voice recorders are not operating and strips are being used at the facility. This space is used to record reported RA events when the voice recorders are not operational and strips are being used at the facility. The letters RA followed by a climb or descent arrow (if the climb or descent action is reported) and the time (hhmm) the event is reported. |
| 9. | **Computer–generated:** Route, destination, and remarks. Manually enter altitude/altitude restrictions in the order flown, if appropriate, and remarks. |
| 9. | **Hand–prepared:** Clearance limit, route, altitude/altitude restrictions in the order flown, if appropriate, and remarks. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e., FL 230 as 23, 5,000 feet as 5, and 2,800 as 2.8.* |
| 9A. | **OPTIONAL USE.** |
| 9B. | **OPTIONAL USE.** |
| 9C. | **OPTIONAL USE.** |
| 10–18. | Enter data as specified by a facility directive. Items, such as departure time, runway used for takeoff, check marks to indicate information forwarded or relayed, may be entered in these spaces. |

**c.** Overflights: Information recorded on the flight progress strips (FAA Forms 7230–7.1, 7230–7.2, and 7230–8) must be entered in the correspondingly numbered spaces. Facility managers can authorize omissions and/or optional use of spaces 2A, 8A, 8B, 9A, 9B, 9C, and 10–18, if no misunderstanding will result. These omissions and/or optional uses must be specified in a facility directive.

*FIG 2–3–6*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2A | 5 | 8 | 9 | 9B | 10 | 11 | 12 |
| 2 | | 6 | 8A | | | 13 | 14 | 15 |
| 3 | | | | | | | | |
| 4 | | 7 | 8B | 9A | 9C | 16 | 17 | 18 |

***TBL 2–3–5***

| Block | Information Recorded |
|---|---|
| 1. | Aircraft identification. |
| 2. | Revision number (FDIO locations only). |
| 2A. | Strip request originator. (At FDIO locations this indicates the sector or position that requested a strip be printed.) |
| 3. | Number of aircraft if more than one, wake category indicator, type of aircraft, and aircraft equipment suffix. |
| 4. | Computer identification number if required. |
| 5. | Secondary radar (beacon) code assigned. |
| 6. | Coordination fix. |
| 7. | Overflight coordination indicator (FDIO locations only). |
| ***NOTE–*** | *The overflight coordination indicator identifies the facility to which flight data has been forwarded.* |
| 8. | Estimated time of arrival at the coordination fix. |
| 8A. | **OPTIONAL USE.** |
| 8B. | **OPTIONAL USE,** when voice recorders are operational;<br>**REQUIRED USE**, when the voice recorders are not operating and strips are being used at the facility. This space is used to record reported RA events when the voice recorders are not operational and strips are being used at the facility. The letters RA followed by a climb or descent arrow (if the climb or descent action is reported) and the time (hhmm) the event is reported. |
| 9. | Altitude and route of flight through the terminal area. |
| ***NOTE–*** | *Altitude information may be written in thousands of feet provided the procedure is authorized by the facility manager, and is defined in a facility directive, i.e., FL 230 as 23, 5,000 feet as 5, and 2,800 as 2.8.* |
| 9A. | **OPTIONAL USE.** |
| 9B. | **OPTIONAL USE.** |
| 9C. | **OPTIONAL USE.** |
| 10–18. | Enter data as specified by a facility directive. |

***NOTE–***
*National standardization of items (10 through 18) is not practical because of regional and local variations in operating methods; e.g., single fix, multiple fix, radar, tower en route control, etc.*

**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 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 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 must be provided for controller use.

**5.** Facilities must revert to flight progress strip usage if backup systems referred to in subparagraph 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.

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

**2.** *"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.*

**e.** *TERMINAL:* In STARS, correlate precipitation descriptors from subparagraph c as follows:

**1.** Level 1 = LIGHT

**2.** Level 2 = MODERATE

**3.** Levels 3 and 4 = HEAVY

**4.** Levels 5 and 6 = EXTREME

**f.** 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.*

**g.** *EN ROUTE*. When issuing 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). If applicable, 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."*

**h.** Controllers must ensure that the highest available level of precipitation intensity within their area of jurisdiction is displayed unless operational/equipment limitations exist.

**i.** 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 lateral limits specified in the clearance.

***REFERENCE–***

*AIM, Para 7–1–12, ATC Inflight Weather Avoidance Assistance, Subpara b1(b).*

**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 and, if necessary, assign a speed 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 necessary) MAINTAIN (speed), (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 all published altitude and speed 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 published top or bottom altitude.*

***REFERENCE–***

*FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*FAA Order 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 weather which may affect the route.

***NOTE–***

*When aircraft are deviating around weather and transitioning from sector to sector, unless previously coordinated, the receiving controller should not assume that the transferring controller has issued weather affecting the aircraft's route of flight.*

**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 20 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 to 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 prevents 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 2–1–15c.*

**j.** 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 REQUESTED DEVIATION, FLY HEADING (heading), ADVISE CLEAR OF WEATHER*

*or*

*UNABLE REQUESTED DEVIATION, TURN (number of degrees) DEGREES (left or right) VECTOR FOR TRAFFIC, ADVISE CLEAR OF WEATHER,*

***EXAMPLE–***

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

# Section 9. Departure Procedures and Separation

## 3–9–1. DEPARTURE INFORMATION

Provide current departure information, as appropriate, to departing aircraft.

**a.** Departure information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS code.

**b.** Issue departure information by including the following:

**1.** Runway in use. (May be omitted if pilot states “have the numbers.”)

**2.** Surface wind from direct readout dial, wind shear detection system, or automated weather observing system information display. (May be omitted if pilot states “have the numbers.”)

**3.** Altimeter setting. (May be omitted if pilot states “have the numbers.”)

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–7–1, Current Settings.*

**c.** Time, when requested.

**d.** Issue the official ceiling and visibility, when available, to a departing aircraft before takeoff as follows:

**1.** To a VFR aircraft when weather is below VFR conditions.

**2.** To an IFR aircraft when weather is below VFR conditions or highest takeoff minima, whichever is greater.

***NOTE–***
*Standard takeoff minimums are published in 14 CFR section 91.175(f). Takeoff minima other than standard are prescribed for specific airports/runways and published in a tabular form supplement to the FAA instrument approach procedures charts and appropriate FAA Forms 8260.*

**e.** 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.

**f.** *USAF NOT APPLICABLE.* An advisory to “check density altitude” when appropriate.

***REFERENCE–***
*FAA Order JO 7210.3, Para 2–10–6, Broadcast Density Altitude Advisory.*

**g.** Issue braking action for the runway in use as received from pilots when braking action advisories are in effect.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–7–2, Altimeter Setting Issuance Below Lowest Usable FL.*
*FAA Order JO 7110.65, Para 3–1–8, Low Level Wind Shear/Microburst Advisories.*
*FAA Order JO 7110.65, Para 3–3–5, Braking Action Advisories.*
*P/CG Term– Braking Action Advisories.*

**h.** Runway Condition Codes. Furnish RwyCC, as received from the Airport Operator, to aircraft via the ATIS.

**i.** For opposite direction departure operations, controllers may verbally issue the RwyCC, as identified in the FICON NOTAM, in reverse order. Controllers must not include reversed RwyCC on the ATIS broadcast.

**j.** When the ATIS is unavailable, and when the runway length available for departure has been temporarily shortened, controllers must ensure that pilots receive the runway number combined with a shortened announcement for all departing aircraft.

***PHRASEOLOGY–***
*RUNWAY (NUMBER) SHORTENED*

***EXAMPLE–***
*“Runway Two-Seven shortened.”*

## 3–9–2. DEPARTURE DELAY INFORMATION

USA/USAF/USN NOT APPLICABLE

When gate-hold procedures are in effect, issue the following departure delay information as appropriate:

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–7, Gate Hold Procedures.*

**a.** Advise departing aircraft the time at which the pilot can expect to receive engine startup advisory.

***PHRASEOLOGY–***
*GATE HOLD PROCEDURES ARE IN EFFECT. ALL AIRCRAFT CONTACT (position) ON (frequency) FOR ENGINE START TIME. EXPECT ENGINE START/TAXI (time).*

**b.** Advise departing aircraft when to start engines and/or to advise when ready to taxi.

***PHRASEOLOGY–***
*START ENGINES, ADVISE WHEN READY TO TAXI,*

*or*

*ADVISE WHEN READY TO TAXI.*

**c.** If the pilot requests to hold in a delay absorbing area, the request must be approved if space and traffic conditions permit.

**d.** Advise all aircraft on GC/FD frequency upon termination of gate hold procedures.

***PHRASEOLOGY–***
*GATE HOLD PROCEDURES NO LONGER IN EFFECT.*

## 3–9–3. DEPARTURE CONTROL INSTRUCTIONS

Inform departing IFR, SVFR, VFR aircraft receiving radar service, and TRSA VFR aircraft of the following:

**a.** Before takeoff.

**1.** Issue the appropriate departure control frequency and beacon code. The departure control frequency may be omitted if a SID has been or will be assigned and the departure control frequency is published on the SID.

***PHRASEOLOGY–***
*DEPARTURE FREQUENCY (frequency), SQUAWK (code).*

**2.** Inform all departing IFR military turboprop/turbojet aircraft (except transport and cargo types) to change to departure control frequency. If the local controller has departure frequency override, transmit urgent instructions on this frequency. If the override capability does not exist, transmit urgent instructions on the emergency frequency.

***PHRASEOLOGY–***
*CHANGE TO DEPARTURE.*

**3.** *USAF.* USAF control towers are authorized to inform all departing IFR military transport/cargo type aircraft operating in formation flight to change to departure control frequency before takeoff.

**b.** After takeoff.

**1.** When the aircraft is about $^{1}/_{2}$ mile beyond the runway end, instruct civil aircraft, and military transport, and cargo types to contact departure control, provided further communication with you is not required.

**2.** Do not request departing military turboprop/turbojet aircraft (except transport and cargo types) to make radio frequency or radar beacon changes before the aircraft reaches 2,500 feet above the surface.

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

## 3–9–4. LINE UP AND WAIT (LUAW)

**a.** The intent of LUAW is to position aircraft for an imminent departure. Authorize an aircraft to line up and wait, except as restricted in subparagraph g, when takeoff clearances cannot be issued because of traffic. Issue

*or*

*TAXI OFF THE RUNWAY.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.*

**m.** 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.*

**n.** 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.*

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

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

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

## 3–9–5. ANTICIPATING SEPARATION

Takeoff clearance need 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 or powered-lift aircraft, visual separation may be applied in lieu of using distance minima.

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

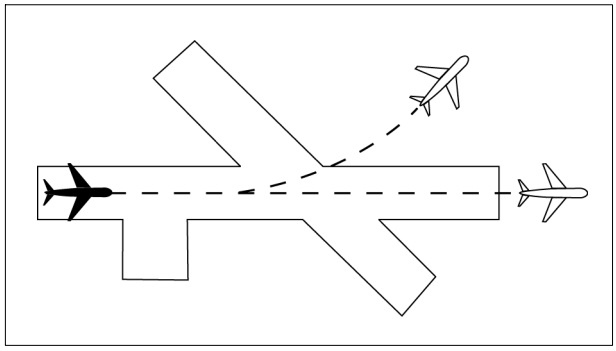
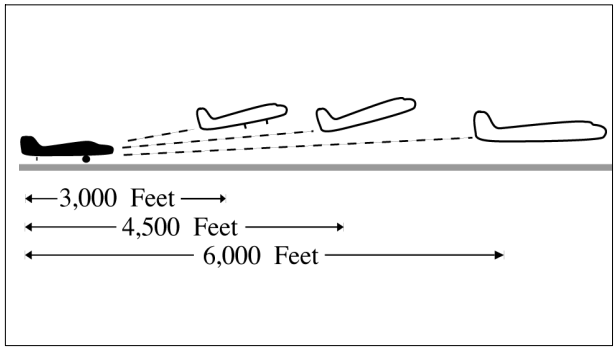


*FIG 3−9−2*
**Same Runway Separation**
**[View 2]**




***NOTE−***
*Aircraft same runway separation (SRS) categories are specified in FAA Order JO 7360.1, Aircraft Type Designators and based upon the following definitions:*

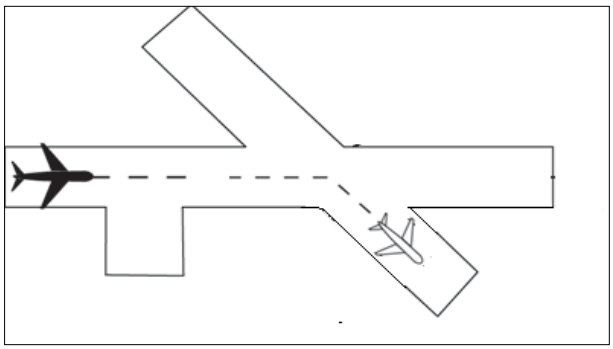
*CATEGORY I − small single−engine propeller driven aircraft weighing 12,500 lbs. or less, and all helicopters.*

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

*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 paragraph 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 paragraph 5–5–4, Minima, subparagraph g and TBL 5–5–1, may be applied in lieu of the time interval requirements in subparagraphs f, g, and h. When paragraph 5–5–4, TBL 5–5–1, is applied, ensure that the appropriate radar separation exists at or prior to the time an aircraft becomes airborne.

***REFERENCE–***
*FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.*
*FAA Order JO 7210.3, Para 10–5–3, Functional Use of Certified Tower Radar Displays.*

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

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

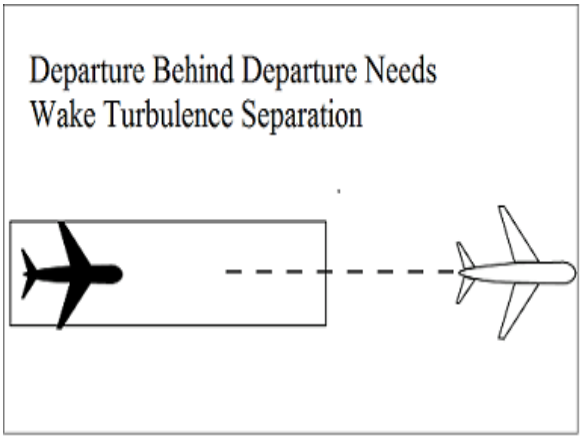
**f.** Separate aircraft taking off from the same runway or a parallel runway separated by less than 2,500 feet (see FIG 3–9–4):

**1.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

*FIG 3–9–4*
**Same Runway Separation**




**g.** Separate a Category I aircraft behind a Category E aircraft by *2 minutes* when departing:

**1.** The same runway or a parallel runway separated by less than 700 feet. (See FIG 3–9–5 and FIG 3–9–6.)

*FIG 3–9–5*
**Same Runway Separation**

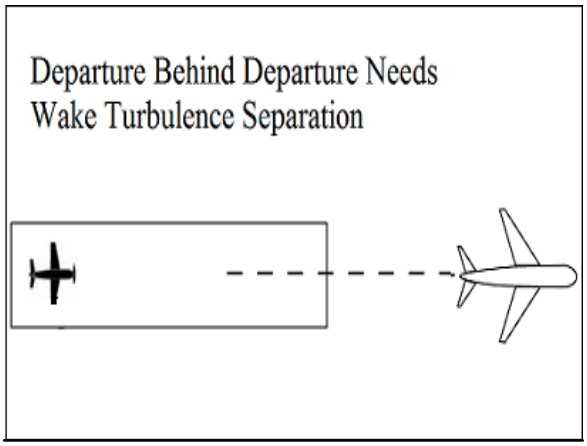
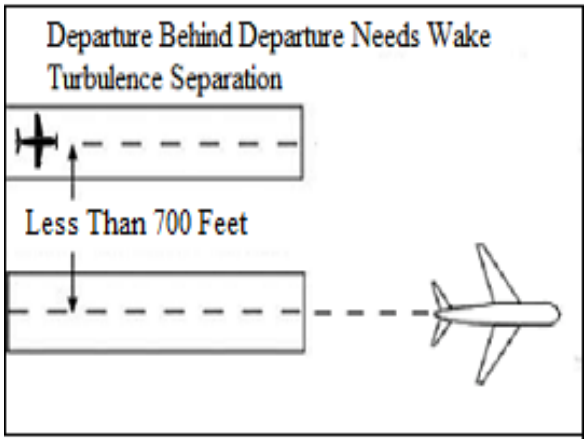
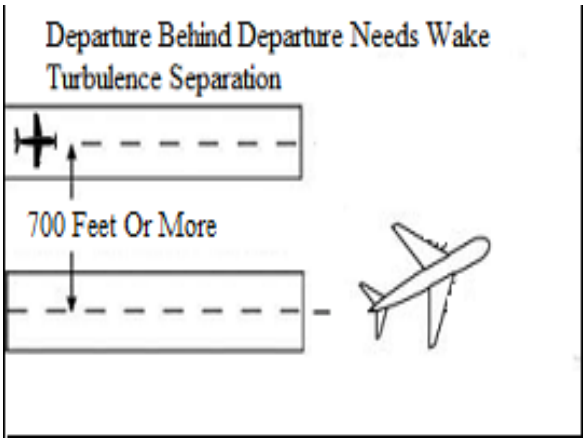



*FIG 3–9–6*
**Parallel Runway Separated by Less than 700 Feet**



**2.** A parallel runway separated by 700 feet or more if projected flight paths will cross. (See FIG 3–9–7).

*FIG 3–9–7*
**Parallel Runway Separated by 700 Feet or More Projected Flight Paths Cross**



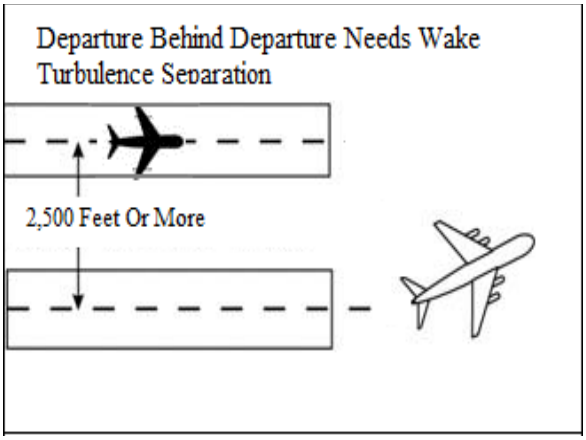

**h.** Separate aircraft departing from a parallel runway separated by 2,500 feet or more if projected flight paths will cross (See FIG 3–9–8):

**1.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

*FIG 3–9–8*
**Parallel Runways Separated by 2,500 feet or More**




**i.** 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.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

**4.** Category I aircraft behind Category E aircraft – *2 minutes*.

**j.** 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.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *4 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *3 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *3 minutes*.

**k.** Separate a Category I aircraft behind a Category E aircraft that has departed or made a low/missed approach by *3 minutes* when utilizing opposite direction takeoffs or landings from:

**1.** The same runway or a parallel runway separated by less than 700 feet.

**2.** A parallel runway separated by 700 feet or more if projected flight paths will cross.

**l.** Do not approve pilot requests to deviate from the required intervals contained in subparagraphs f through k.

***PHRASEOLOGY–***
*HOLD FOR WAKE TURBULENCE.*

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

**m.** Separate a Category I aircraft behind a Category F or G aircraft 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.*

**n.** 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 Category I aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing Category F, G, or H aircraft 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 Category I aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing Category E aircraft by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the Category E aircraft has taken off from:

**(a)** The same runway or a parallel runway separated by less than 700 feet.

**(b)** Parallel runways separated by 700 feet or more, or parallel runways separated by 700 feet or more with the runway thresholds offset by 500 feet or more, if projected flight paths will cross.

**3.** 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:

**(a)** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *4 minutes*.

**(b)** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft –*3 minutes*.

**(c)** Category E, F, G, H, or I aircraft behind Category C aircraft – *3 minutes.*

***NOTE–***
*Apply paragraph 3–9–6, Same Runway Separation, subparagraph f, to parallel runways separated by less than 2,500 feet with runway thresholds offset by less than 500 feet.*

**4.** Inform aircraft when it is necessary to hold in order to provide the required time interval.

***PHRASEOLOGY–***
*HOLD FOR WAKE TURBULENCE.*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

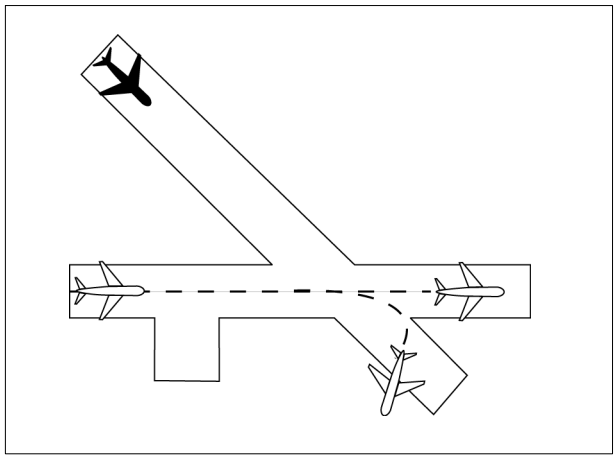
**a.** Issue traffic information to each aircraft operating on intersecting runways.

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

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

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

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



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

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

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

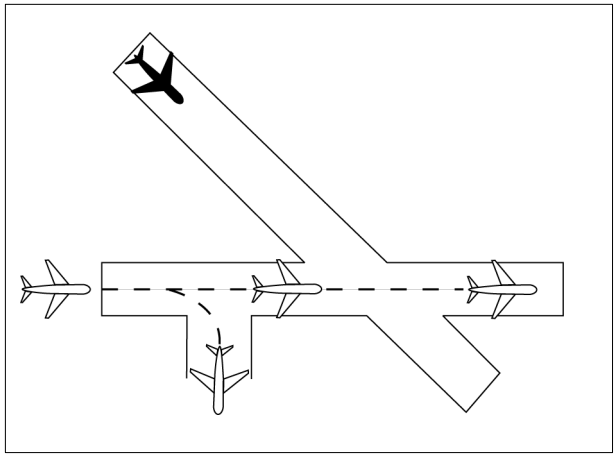
**(c)** Has completed landing roll and acknowledged the instruction to exit the runway prior to intersection, or

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

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

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

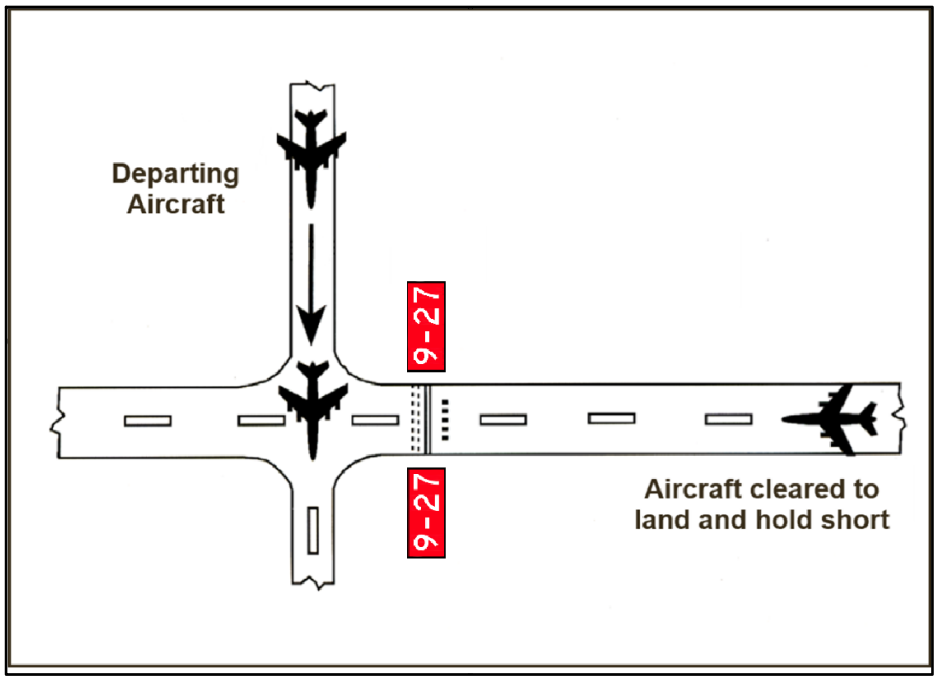
*FIG 3–9–10*
**Intersecting Runway Separation**



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

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

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




**WAKE TURBULENCE APPLICATION**

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

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

**(a)** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**(b)** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**(c)** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

**(d)** Category I aircraft behind Category E aircraft – *2 minutes*.

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

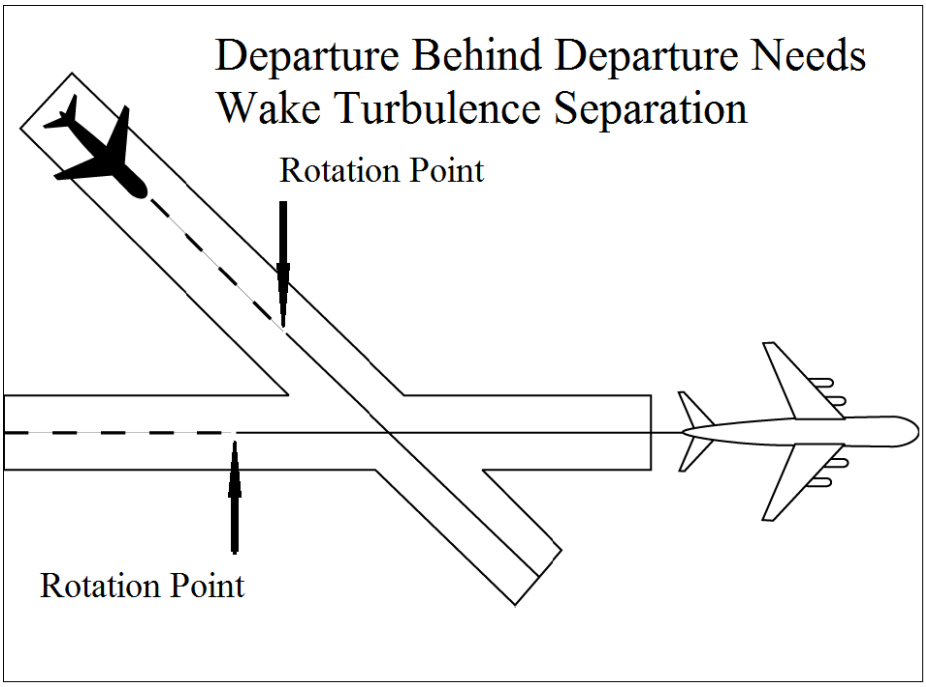
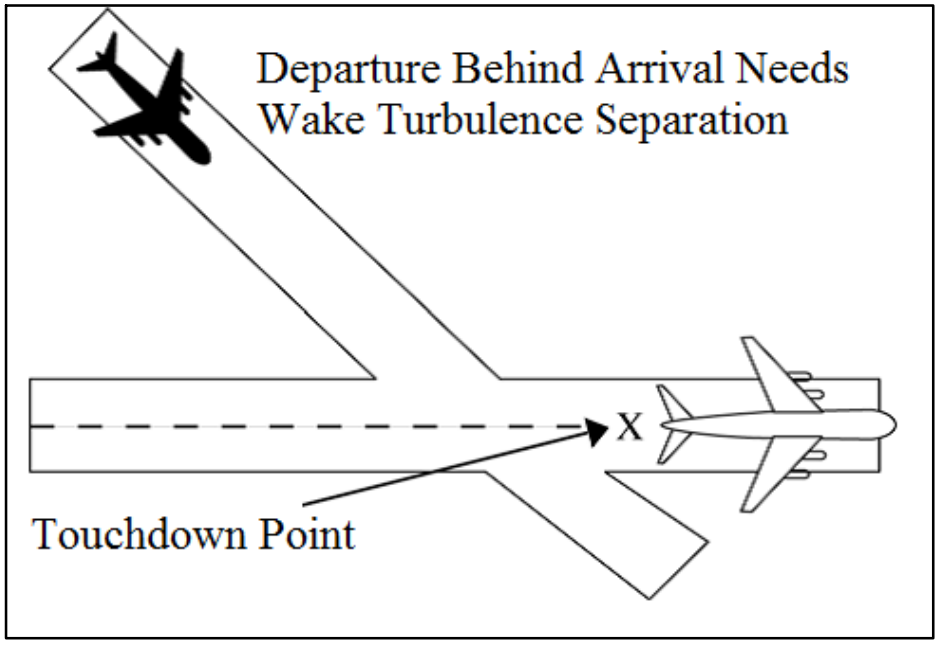



*FIG 3–9–13*
**Departure Behind Arrival on Intersecting Runway**




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

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

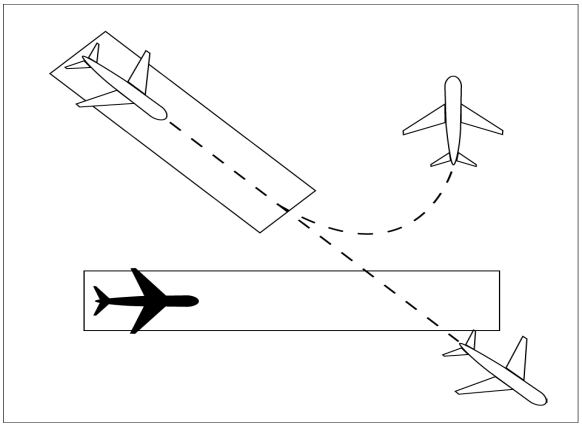
## 3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

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

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

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

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



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

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

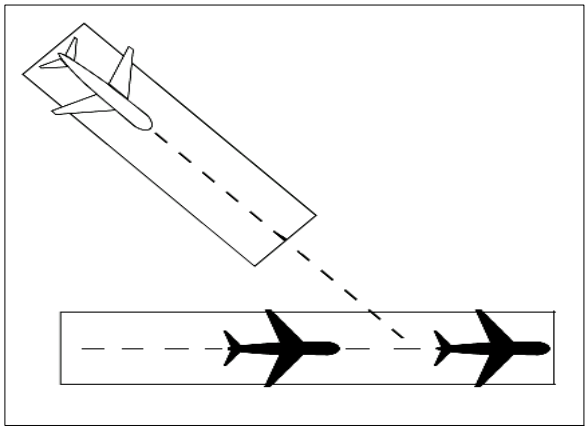
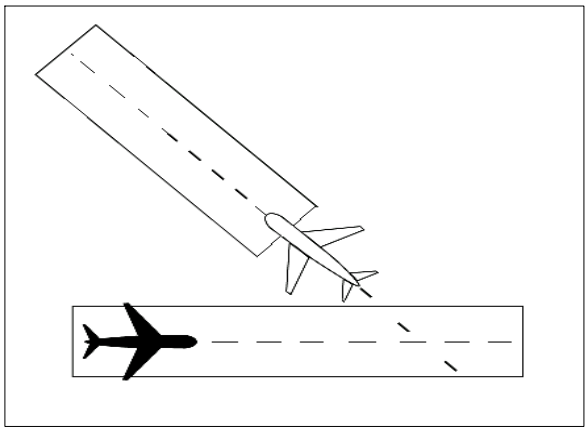


*FIG 3–9–16*

**Converging Runway Separation**



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

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

*FIG 3–9–17*

**Converging Runway Separation**

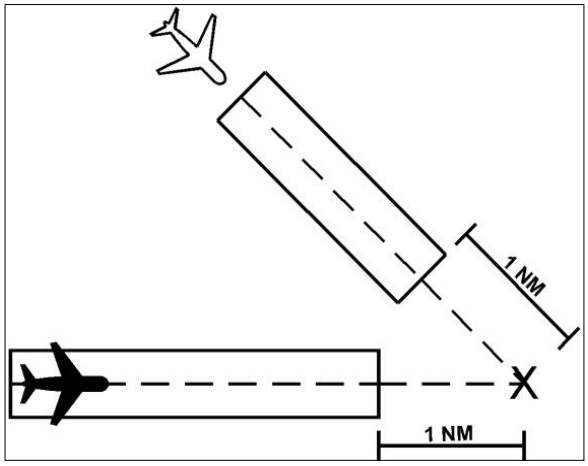
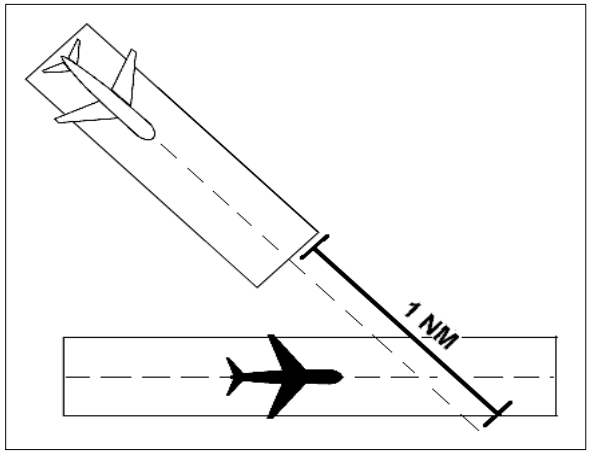


*FIG 3–9–18*
**Converging Runway Separation**




**WAKE TURBULENCE APPLICATION**

**c.** Separate aircraft taking off behind a landing or departing aircraft on a converging runway if projected flight paths will cross (See FIG 3–9–19 and FIG 3–9–20):

**1.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

**4.** Category I aircraft behind Category E aircraft – *2 minutes*.

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

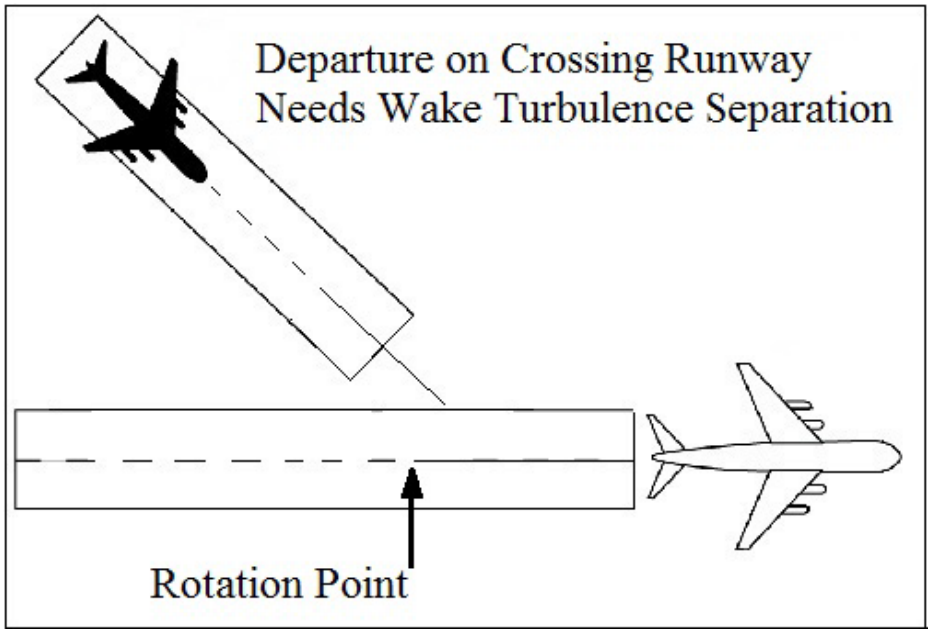
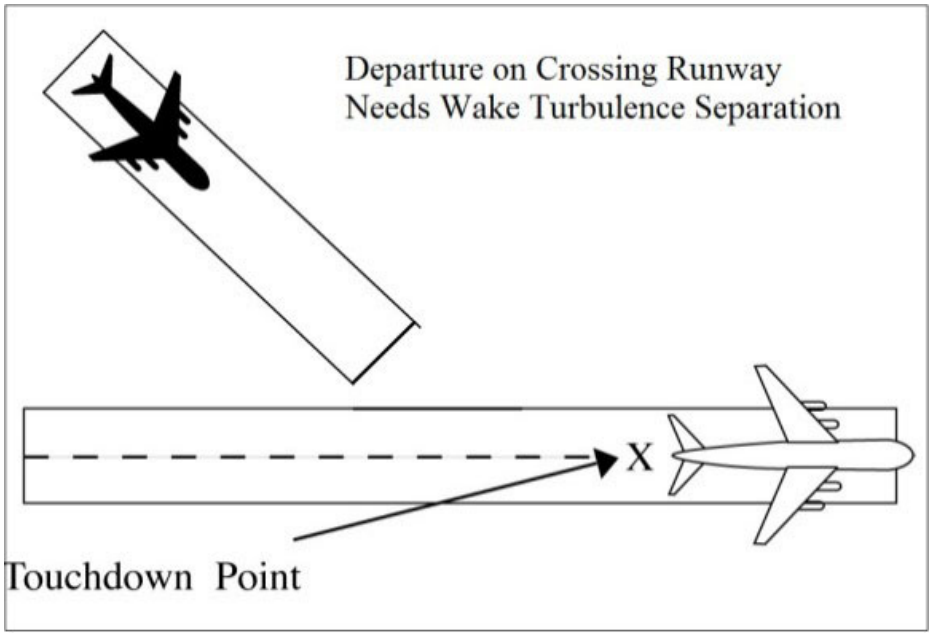


*FIG 3–9–20*
**Converging Runway Separation**




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

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

## 3–9–10. TAKEOFF CLEARANCE

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

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

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

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

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

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

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

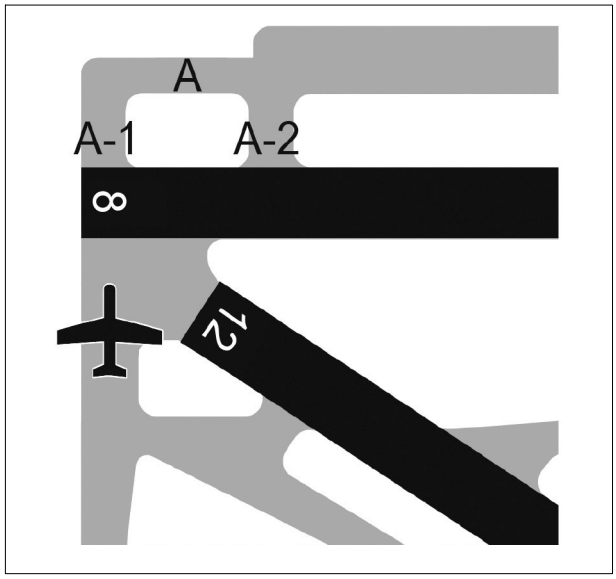
**c.** When two or more aircraft call the tower ready for departure, one or more at the full length of a runway and one or more at an intersection, state the location of the aircraft at the full length of the runway when clearing that aircraft for takeoff.

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

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

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

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

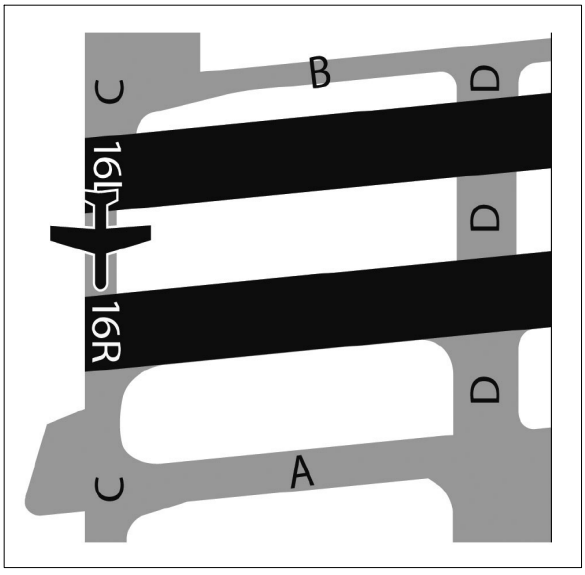



**e.** At those airports where the airport configuration does not allow for an aircraft to completely cross one runway and hold short of the departure runway and/or where airports do not have runway hold markings between runways, state the runway to be crossed with the takeoff clearance if the aircraft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

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

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

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




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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

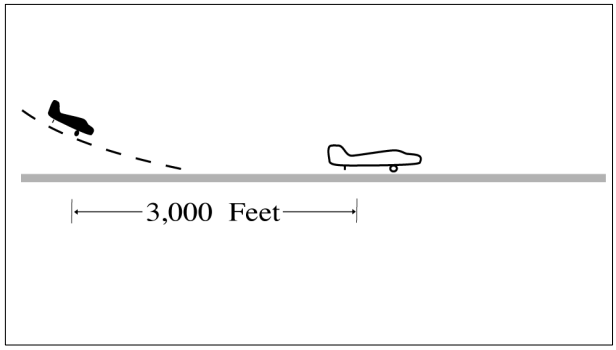
Cancel a previously issued clearance for takeoff and inform the pilot of the reason if circumstances require. Once an aircraft has started takeoff roll, cancel the takeoff clearance only for the purpose of safety.

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

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

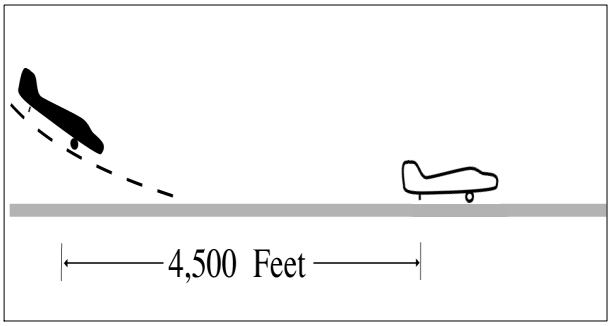
**(a)** When a Category I aircraft is landing behind a Category I or II– *3,000 feet*. (See FIG 3–10–2.)

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




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

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




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

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

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

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

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

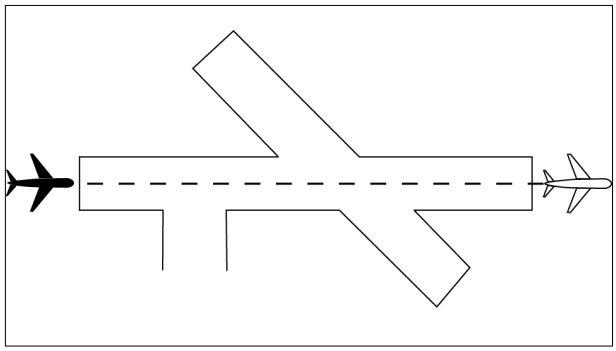
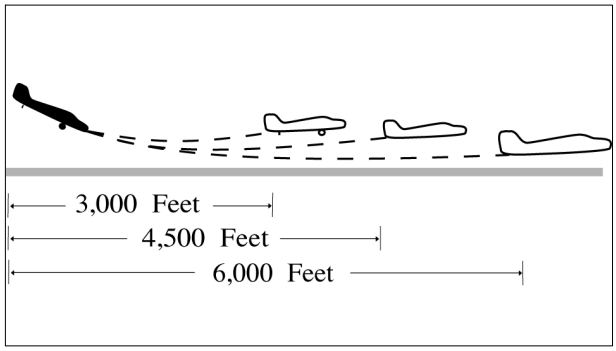


*FIG 3–10–5*
**Same Runway Separation**




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

**WAKE TURBULENCE APPLICATION**

**b.** Issue wake turbulence advisories, and the position, altitude if known, and the direction of flight of departing or arriving aircraft on the same runway or parallel runways separated by less than 2,500 feet to:

**1.** Category B, C, D, E, F, G, H, and I aircraft behind Category A, B, or D aircraft.

**2.** Category E, F, G, H, or I aircraft behind Category C aircraft.

**3.** Category I aircraft behind Category E aircraft.

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para 11, Pilot Responsibility.*
*FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.*

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

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

**3.** *"Traffic, heavy Boeing 787 on 2-mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."*

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

Issue traffic information to each aircraft operating on intersecting runways.

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

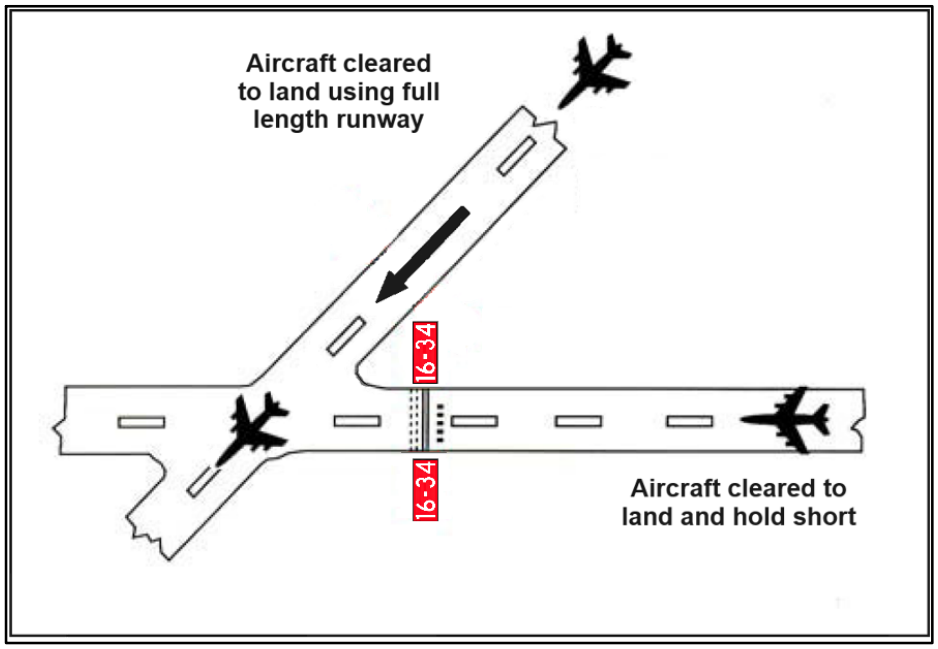
***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories.*

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

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

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

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




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

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

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

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

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

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

**WAKE TURBULENCE APPLICATION**

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

**1.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

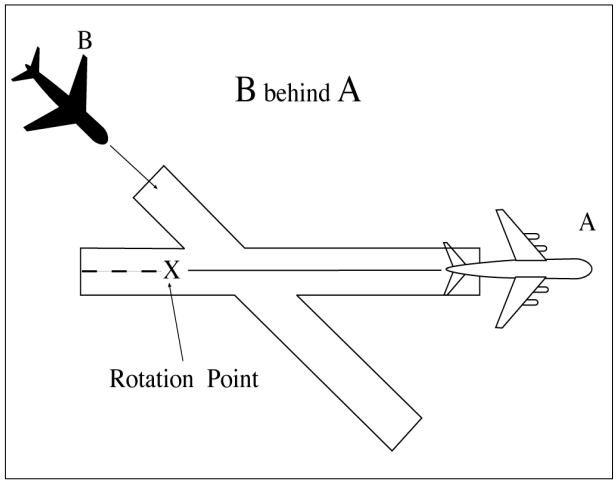
**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

**4.** Category I aircraft behind Category E aircraft – *2 minutes*.

**d.** Issue wake turbulence cautionary advisories, the position, altitude if known, and direction of flight of Category A, B, C, D, or E aircraft to:

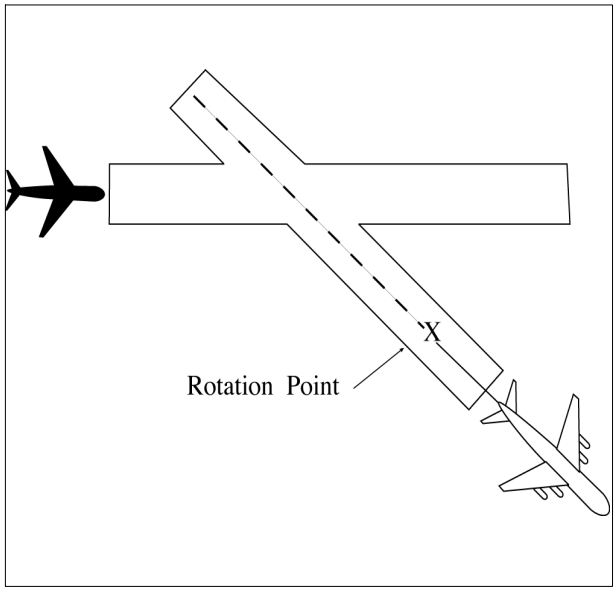
***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para 11, Pilot Responsibility.*

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




**1.** All aircraft landing on a crossing runway behind a departing aircraft that requires wake turbulence separation behind it if the arrival flight path will cross the takeoff path behind the departing aircraft rotation point. (See FIG 3−10−12.)

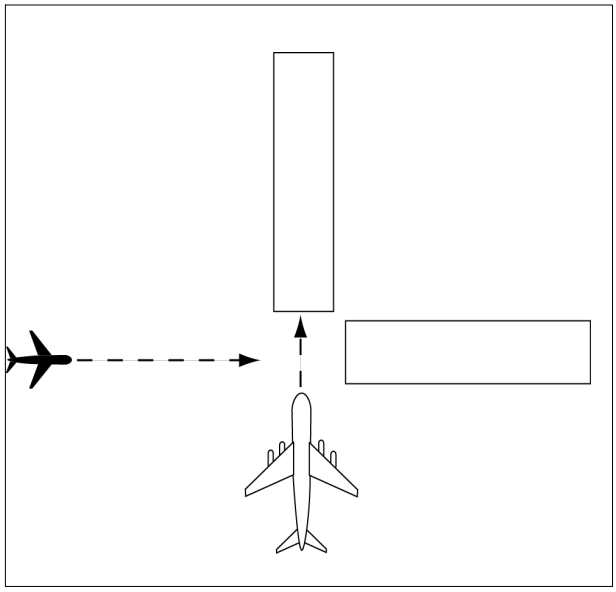
*FIG 3−10−12*
**Intersecting Runway Separation**




***EXAMPLE−***
*"Runway niner cleared to land. Caution wake turbulence, heavy C−Seventeen departing runway one five."*

**2.** All VFR aircraft landing on a crossing runway behind an arriving Category A, B, C, or D aircraft and VFR Category I aircraft landing on a crossing runway behind a Category E aircraft, if the arrival flight paths will cross. (See FIG 3−10−13.)

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



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

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

## 3–10–5. LANDING CLEARANCE

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

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

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

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

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

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

*Or*

*READ BACK HOLD SHORT INSTRUCTIONS.*

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

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

*"Read back hold short instructions."*

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

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

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

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

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

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

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

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–6–4, Safety Logic Alert Responses.*
*FAA Order JO 7110.65, Para 3–10–8, Withholding Landing Clearance.*
*FAA Order JO 7110.65, Para 5–14–9, Approach Runway Verification (ARV).*

**e.** Procedures.

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

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

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

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

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

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

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

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

*"American Four Ninety Two, Roger."*

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

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

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

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

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

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

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

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

## 3−10−11. CLOSED TRAFFIC

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

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

*or*

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

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

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

## 3−10−12. OVERHEAD MANEUVER

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

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

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

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

***PHRASEOLOGY–***
*REPORT INITIAL.*

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

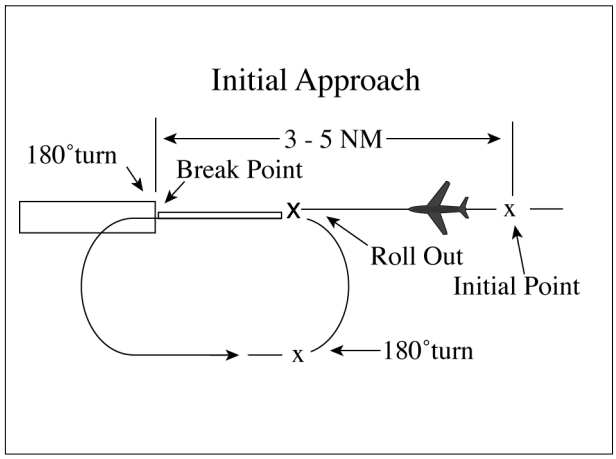
***PHRASEOLOGY–***
*BREAK AT (specified point).*

*REPORT BREAK.*

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

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

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




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

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

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

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

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

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

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

# Section 11. Helicopter Operations

## 3–11–1. TAXI AND GROUND MOVEMENT OPERATION

**a.** When necessary for a wheeled helicopter or powered-lift aircraft to taxi on the surface, use the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

***NOTE–***
*Ground taxiing uses less fuel than hover-taxiing and minimizes air turbulence. However, under certain conditions, such as rough, soft, or uneven terrain, it may become necessary to hover/air-taxi for safety considerations. Helicopters with articulating rotors (usually designs with three or more main rotor blades) are subject to "ground resonance" and may, on rare occasions, suddenly lift off the ground to avoid severe damage or destruction.*

**b.** When requested or necessary for a helicopter or powered-lift aircraft to proceed at a slow speed above the surface, normally below 20 knots and in ground effect, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

***PHRASEOLOGY–***
*HOVER-TAXI (supplemented, as appropriate, from paragraph 3–7–2, Taxi and Ground Movement Operations.)*

*CAUTION (dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.).*

***NOTE–***
*Hover-taxiing consumes fuel at a high burn rate, and helicopter downwash turbulence (produced in ground effect) increases significantly with larger and heavier helicopters.*

***REFERENCE–***
*P/CG Term– Hover Taxi.*
*AIM, Para 4–3–17, VFR Helicopter Operations at Controlled Airports.*

**c.** When requested or necessary for a helicopter or powered-lift aircraft to proceed expeditiously from one point to another, normally below 100 feet AGL and at airspeeds above 20 knots, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

***PHRASEOLOGY–***
*AIR-TAXI:*

*VIA (direct, as requested, or specified route)*

*TO (location, heliport, helipad, vertiport, vertipad operating/movement area, active/inactive runway).*

*AVOID (aircraft/vehicles/personnel). If required,*

*REMAIN AT OR BELOW (altitude).*

*CAUTION (wake turbulence or other reasons above).*

*LAND AND CONTACT TOWER,*

*or*

*HOLD FOR (reason– takeoff clearance, release, landing/taxiing aircraft, etc.)*

***NOTE–***
*Air-taxi is the preferred method for helicopter movements on airports provided ground operations/conditions permit. Air-taxi authorizes the pilot to proceed above the surface either via hover-taxi or flight at speeds more than 20 knots. Unless otherwise requested or instructed, the pilot is expected to remain below 100 feet AGL. The pilot is solely responsible for selecting a safe airspeed for the altitude/operation being conducted.*

***REFERENCE–***
*P/CG Term – Air Taxi.*
*AIM, Para 4–3–17, VFR Helicopter Operations at Controlled Airports.*

**WAKE TURBULENCE APPLICATION**

**d.** Avoid clearances which require small aircraft or helicopters to taxi in close proximity to taxiing or hover-taxi helicopters.

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

## 3–11–2. HELICOPTER/POWERED-LIFT TAKEOFF CLEARANCE

**a.** Issue helicopter or powered-lift takeoff clearances from movement areas other than active runways or in diverse directions from active runways, with additional instructions as necessary. Whenever possible, issue takeoff clearance in lieu of extended hover-taxi or air-taxi operations.

***PHRASEOLOGY–***
*(Present position, taxiway, helipad, numbers) MAKE RIGHT/LEFT TURN FOR (direction, points of compass, heading, NAVAID radial) DEPARTURE/DEPARTURE ROUTE (number, name, or code), AVOID (aircraft/vehicles/personnel),*

*or*

*REMAIN (direction) OF (active runways, parking areas, passenger terminals, etc.).*

*CAUTION (power lines, unlighted obstructions, trees, wake turbulence, etc.).*

*CLEARED FOR TAKEOFF.*

**b.** If takeoff is requested from non-movement areas, an area not authorized for helicopter or powered-lift aircraft use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the takeoff clearance in subparagraph a.

***PHRASEOLOGY–***
*DEPARTURE FROM (requested location) WILL BE AT YOUR OWN RISK (additional instructions, as necessary). USE CAUTION (if applicable).*

**c.** Unless agreed to by the pilot, do not issue downwind takeoffs if the tailwind exceeds 5 knots.

***NOTE–***
*A pilot request to takeoff from a given point in a given direction constitutes agreement.*

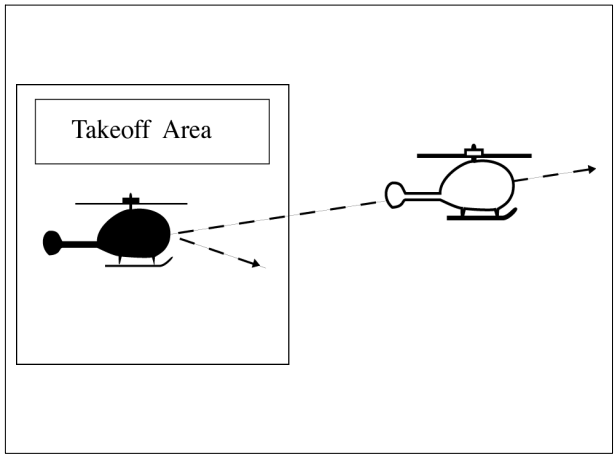
## 3–11–3. HELICOPTER/POWERED-LIFT DEPARTURE SEPARATION

Separate a departing helicopter or powered-lift aircraft from other helicopters or powered-lift aircraft by ensuring that it does not takeoff until one of the following conditions exists:

***NOTE–***
*Helicopters or powered-lift aircraft performing air-taxiing operations within the boundary of the airport are considered to be taxiing aircraft.*

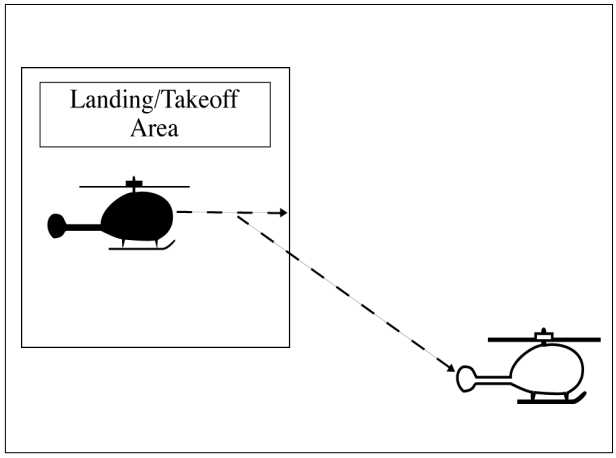
**a.** A preceding, departing helicopter or powered-lift aircraft has left the takeoff area. (See FIG 3–11–1.)

*FIG 3–11–1*
**Helicopter Departure Separation**




**b.** A preceding, arriving helicopter or powered-lift aircraft has taxied off the landing area. (See FIG 3–11–2.)

*FIG 3–11–2*
**Helicopter Departure Separation**




## 3–11–4. HELICOPTER/POWERED-LIFT ARRIVAL SEPARATION

Separate an arriving helicopter or powered-lift aircraft from other helicopters or powered-lift aircraft by ensuring that it does not land until one of the following conditions exists:

**a.** A preceding, arriving helicopter or powered-lift aircraft has come to a stop or taxied off the landing area. (See FIG 3–11–3 and FIG 3–11–4.)

*FIG 3–11–3*
**Helicopter Arrival Separation**

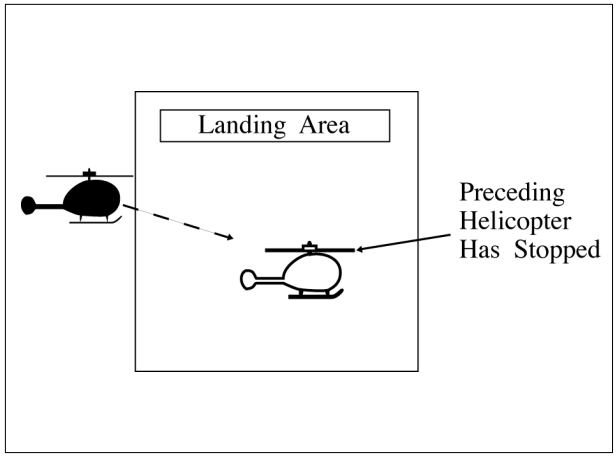
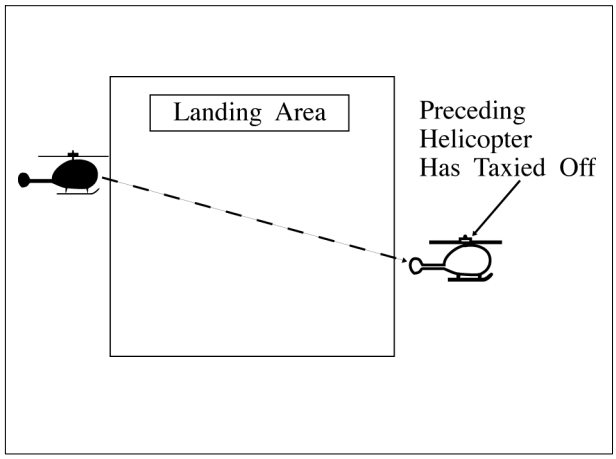
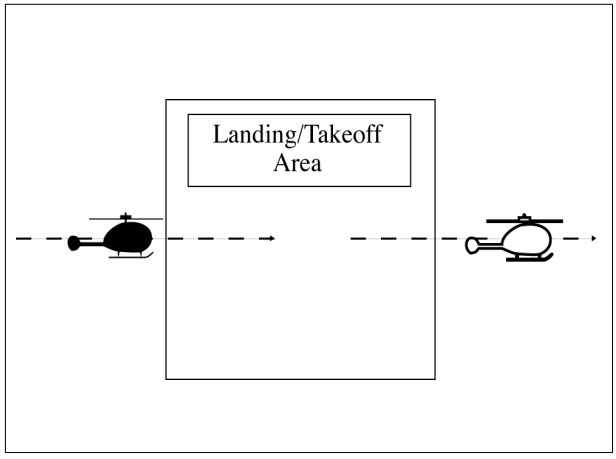



*FIG 3–11–4*
**Helicopter Arrival Separation**




**b.** A preceding, departing helicopter or powered-lift aircraft has left the landing area. (See FIG 3–11–5.)

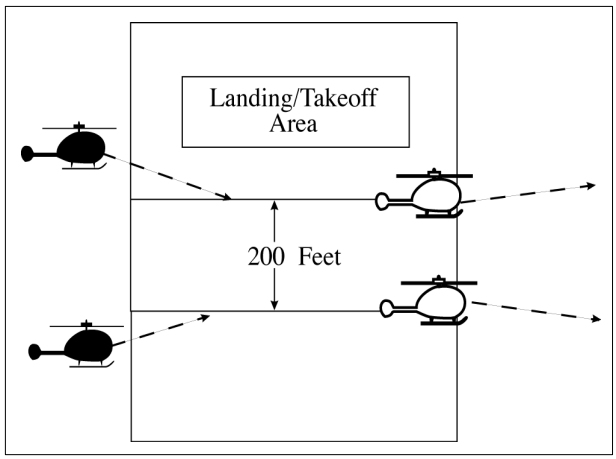
*FIG 3–11–5*
**Helicopter Arrival Separation**



## 3–11–5. SIMULTANEOUS LANDINGS OR TAKEOFFS

Authorize helicopters or powered-lift aircraft to conduct simultaneous landings or takeoffs if the distance between the landing or takeoff points is at least 200 feet and the courses to be flown do not conflict. Refer to surface markings to determine the 200 foot minimum or instruct a helicopter or powered-lift aircraft to remain at least 200 feet from another helicopter or powered-lift aircraft. (See FIG 3–11–6.)

*FIG 3–11–6*
**Simultaneous Helicopter Landings or Takeoffs**




## 3–11–6. HELICOPTER/POWERED-LIFT LANDING CLEARANCE

**a.** Issue landing clearances to helicopters or powered-lift aircraft going to movement areas other than active runways or from diverse directions to points on active runways, with additional instructions as necessary. Whenever possible, issue a landing clearance in lieu of extended hover-taxi or air-taxi operations.

***PHRASEOLOGY–***
*MAKE APPROACH STRAIGHT-IN/CIRCLING LEFT/RIGHT TURN TO (location, runway, taxiway, helipad, vertipad, Maltese cross) ARRIVAL/ARRIVAL ROUTE (number, name, or code).*

*HOLD SHORT OF (active runway, extended runway centerline, other).*

*REMAIN (direction/distance; e.g., 700 feet, 1 1/2 miles) OF/FROM (runway, runway centerline, other helicopter/aircraft).*

*CAUTION (power lines, unlighted obstructions, wake turbulence, etc.).*

*CLEARED TO LAND.*

**b.** If landing is requested to non-movement areas, an area not authorized for helicopter or powered-lift aircraft use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the landing clearance in subparagraph a.

***PHRASEOLOGY–***
*LANDING AT (requested location) WILL BE AT YOUR OWN RISK (additional instructions, as necessary). USE CAUTION (if applicable).*

**c.** Unless agreed to by the pilot, do not issue downwind landings if the tailwind exceeds 5 knots.

***NOTE–***
*A pilot request to land at a given point from a given direction constitutes agreement.*

*the clearance provision to cross the Lakeview VOR at or above FL 200, and after passing Lakeview VOR, the pilot is expected to descend at the rates specified in the AIM until reaching the assigned altitude of 6,000 feet.*

***EXAMPLE–***
*"United Four Seventeen, cross Lakeview V–O–R at and maintain six thousand."*

***NOTE–***
*The pilot is authorized to conduct descent "at pilot's discretion," but must comply with the clearance provision to cross Lakeview VOR at 6,000 feet.*

***EXAMPLE–***
*"United Four Seventeen, descend now to flight level two seven zero, cross Lakeview V–O–R at or below one zero thousand, descend and maintain six thousand."*

***NOTE–***
*The pilot is expected to promptly execute and complete descent to FL 270 upon receipt of the clearance. After reaching FL 270, the pilot is authorized to descend "at pilot's discretion" until reaching Lakeview VOR. The pilot must comply with the clearance provision to cross Lakeview VOR at or below 10,000 feet. After Lakeview VOR, the pilot is expected to descend at the rates specified in the AIM until reaching 6,000 feet.*

***NOTE–***
**1.** *A descent clearance which specifies a crossing altitude authorizes descent at pilot's discretion for that portion of the flight to which the crossing altitude restriction applies.*

**2.** *Any other time that authorization to descend at pilot's discretion is intended, it must be specifically stated by the controller.*

**3.** *The pilot may need to know of any future restrictions that might affect the descent, including those that may be issued in another sector, in order to properly plan a descent at pilot's discretion.*

**4.** *Controllers need to be aware that the descent rates in the AIM are only suggested and aircraft will not always descend at those rates.*

***REFERENCE–***
*P/CG Term– Pilot's Discretion.*

**e.** When a portion of a climb/descent may be authorized at the pilot's discretion, specify the altitude the aircraft must climb/descend to followed by the altitude to maintain at the pilot's discretion.

***PHRASEOLOGY–***
*CLIMB/DESCEND NOW TO (altitude), THEN CLIMB/DESCEND AT PILOT'S DISCRETION MAINTAIN (altitude).*

***EXAMPLE–***
*"United Three Ten, descend now to flight level two eight zero, then descend at pilot's discretion maintain flight level two four zero."*

***NOTE–***
**1.** *The pilot is expected to commence descent upon receipt of the clearance and to descend as prescribed in the AIM, paragraph 4–4–10, Adherence to Clearance, until FL 280. At that point, the pilot is authorized to continue descent to FL 240 within context of the term "at pilot's discretion" as described in the AIM.*

**2.** *Controllers need to be aware that the descent rates are only suggested and aircraft will not always descend at those rates.*

**f.** When the "pilot's discretion" portion of a climb/descent clearance is being canceled by assigning a new altitude, inform the pilot that the new altitude is an "amended altitude."

***EXAMPLE–***
*"American Eighty Three, amend altitude, descend and maintain Flight Level two six zero."*

***NOTE–***
*American Eighty Three, at FL 280, has been cleared to descend at pilot's discretion to FL 240. Subsequently, the altitude assignment is changed to FL 260. Therefore, pilot's discretion is no longer authorized.*

**g.** Altitude assignments involving more than one altitude.

***PHRASEOLOGY–***
*MAINTAIN BLOCK (altitude) THROUGH (altitude).*

**h.** Instructions to vertically navigate SIDs/STARs with published crossing restrictions (Climb Via/Descend Via).

**1.** When established on the SID/STAR.

**2.** When navigating a published route inbound to the STAR.

**3.** When cleared direct to a waypoint/fix without a published altitude, assign a crossing altitude.

***PHRASEOLOGY–***
*DESCEND VIA (STAR name and number).*

*DESCEND VIA (STAR name and number), (runway transition number) (or landing direction).*

*DESCEND VIA (STAR name and number), (runway number).*

*CLIMB VIA (SID name and number).*

*CLIMB VIA (SID name and number), (en route transition).*

*PROCEED DIRECT (fix/waypoint), CROSS (waypoint/fix) at (altitude) THEN DESCEND VIA (STAR name and number).*

***EXAMPLE–***
*"Descend via Eagul Six arrival."*

*"Descend via the Wynde Eight Arrival, Runway 28 right transition."*

*"Descend via the Lendy One Arrival, Runway 22 left."*

*"Climb Via Ddany Three departure."*

*"Proceed direct Denis, cross Denis at or above flight level two zero zero, then descend via the Mmell One arrival."*

*"Climb Via Niitz Three departure, Sskee transition."*

*"Descend via Chsly Five Arrival, landing south."*

***NOTE–***
*Pilots must comply with all published speed restrictions on SIDs/STARs, independent of a climb via or descend via clearance.*

*Clearance to "descend via" authorizes pilots:*
***1.*** *To begin descent to the first published altitude on the procedure prior to the aircraft reaching the beginning of the STAR.*
***2.*** *To descend at pilot discretion to meet published restrictions on a STAR. Pilots navigating on a STAR must maintain the last assigned altitude until receiving clearance to descend via. Once leaving an altitude, the pilot may not return to that altitude without an ATC clearance.*
***3.*** *When cleared direct to a waypoint, to descend at pilot discretion to meet restrictions on the procedure. ATC assumes obstacle clearance responsibility for aircraft not yet established or taken off of a procedure.*
***4.*** *To adjust speeds prior to reaching waypoints with published speed restrictions.*

***NOTE–***
*When cleared for SIDs that contain published speed restrictions, the pilot must comply with those speed restrictions independent of any "climb via" clearance. Clearance to "climb via" authorizes pilots:*
**1.** *When used in the IFR departure clearance, in a PDC, DCL or when subsequently cleared after departure to a waypoint depicted on a SID, to join a procedure after departure or resume a procedure.*
**2.** *When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot's discretion to the altitude depicted for the next waypoint. ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID.*
**3.** *Once established on the depicted departure, to climb and to meet all published or assigned altitude and speed restrictions.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*
*FAA Order JO 7110.65, Para 5–5–9, Separation From Obstructions.*
*P/CG – Climb Via, Descend Via.*

***NOTE–***
*Pilots cleared for vertical navigation using the phraseology "descend via" or "climb via" must inform ATC, upon initial contact, of the altitude leaving, the runway transition or landing direction if assigned (STARs), and any assigned restrictions not published on the procedure.*

***EXAMPLE–***
*"Delta One Twenty One leaving flight level one niner zero, descending via the Eagul Five arrival runway two-six transition."*

*"Delta One Twenty One leaving flight level one niner zero for one two thousand, descending via the Eagul Five arrival, runway two-six transition."*

*"JetBlue six zero two leaving flight level two one zero descending via the Ivane Two arrival landing south."*

*"Cactus Seven Eleven leaving two thousand climbing via the Laura Two departure."*

*"Cactus Seven Eleven leaving two thousand for one-six thousand, climbing via the Laura Two departure."*

***REFERENCE–***
*AIM, Para 5-2-8, Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID).*
*P/CG – Top Altitude, Bottom Altitude.*
*AIM, Para 5-4-1, Standard Terminal Arrival (STAR) Procedures.*

***INTERPRETATION–***
*7110.65, 4–5–7, Altitude Information (12–1–2015)*

**4.** After a "climb via" or "descend via" clearance has been issued, if the aircraft is cleared direct to a waypoint/fix, the "climb via" or "descend via" clearance must be restated. The name of the SID or STAR does not need to be restated.

***PHRASEOLOGY–***
*CLEARED/PROCEED DIRECT (waypoint/fix), THEN CLIMB VIA SID.*

**5.** When vectoring or approving an aircraft to deviate, state an altitude to maintain and advise the pilot if you intend on clearing the aircraft to resume the "climb via" or "descend via" procedure.

***NOTE–***
*Once an aircraft is established on a SID or STAR and is climbing or descending via, if the aircraft is cleared direct to a downstream fix, or cleared to deviate, the aircraft is considered to be off the procedure.*

***PHRASEOLOGY–***
*DEVIATION (restrictions as necessary) APPROVED, MAINTAIN (altitude), EXPECT TO RESUME STAR/SID AT (waypoint/fix).*

*CLEARED/PROCEED DIRECT (waypoint/fix), CROSS (waypoint/fix) (altitude), THEN CLIMB VIA SID.*

***EXAMPLE–***
*"Deviation right of course approved, maintain one four thousand, expect to resume STAR at Glaxi."*

*"Proceed direct Mkgee, cross Mkgee at or above six thousand, then Climb Via SID."*

**6.** A "descend via" clearance must not be used where procedures contain only published "expect" altitude and/or speed restrictions.

***NOTE–***
*Pilots are not expected to comply with published "expect" restrictions in the event of lost communications, unless ATC has specifically advised the pilot to expect these restrictions as part of a further clearance.*

**7.** "Descend via" may be used on procedures that contain both "expect" and required altitude and speed restrictions only if altitude and/or speed restrictions or alternate restrictions are issued for the fix/waypoint associated with all expect restrictions.

**8.** "Descend via" clearances may also be issued if an aircraft is past all fixes/waypoints that have expect restrictions.

**9.** If it is necessary to assign a crossing altitude which differs from the STAR or SID altitude, emphasize the change to the pilot.

***PHRASEOLOGY–***
*DESCEND VIA (STAR name and number) ARRIVAL, EXCEPT CROSS (fix, point, waypoint), (revised altitude information).*

***EXAMPLE–***
*"United 454 descend via the Haris One Arrival, except cross Haris at or above one six thousand."*

***NOTE–***
*The aircraft should track laterally and vertically on the Haris One Arrival and should descend so as to cross Haris at or above 16,000; remainder of the arrival must be flown as published.*

***PHRASEOLOGY–***
*CLIMB VIA SID, EXCEPT CROSS (fix, point, waypoint), (revised altitude information).*

*CLIMB VIA (SID name and number), EXCEPT CROSS (fix, point, waypoint), (revised altitude information).*

***EXAMPLE–***
**1**. *"Climb via SID except cross Mkala at or above seven thousand."*

***NOTE–***
*In Example 1, the aircraft will comply with the assigned SID departure lateral path and any published speed and altitude restrictions and climb so as to cross Mkala at or above 7,000; remainder of the departure must be flown as published.*

***EXAMPLE–***
**2**. *(There is a published altitude at Dvine WP): "Proceed direct Dvine, Climb via the Suzan Two departure except cross Mkala at or above seven thousand."*

***NOTE–***
*In Example 2, the aircraft will join the Suzan Two departure at Dvine, at the published altitude, and then comply with the published lateral path and any published speed or altitude restrictions. The aircraft will climb so as to cross Mkala at or above 7,000; remainder of the departure must be flown as published.*

**10.** When an aircraft has been issued an interim altitude and after departure ATC can subsequently clear the aircraft to climb to the original top altitude published in a SID that contains published crossing restrictions, instruct aircraft to "climb via SID." When issuing a different altitude and compliance with published restrictions is still required, instruct aircraft to "climb via SID except maintain (altitude)."

***PHRASEOLOGY–***
*CLIMB VIA SID.*

*CLIMB VIA SID EXCEPT MAINTAIN (altitude).*

***EXAMPLE–***
**1**. *(An aircraft was issued the Teddd One departure, "climb via SID" in the IFR departure clearance. An interim altitude of 10,000 was issued instead of the published top altitude of FL 230; after departure ATC is able to issue the published top altitude): "Climb via SID."*

***NOTE–***
*In Example 1, the aircraft will track laterally and vertically on the Teddd One departure and initially climb to 10,000; Once re-issued the "climb via" clearance the interim altitude is canceled aircraft will continue climb to FL230 while complying with published restrictions.*

***EXAMPLE–***
**2**. *(Using Example 1, after departure ATC is able to issue an altitude higher than the published top altitude): "Climb via SID except maintain flight level two six zero."*

***NOTE–***
*In Example 2, the aircraft will track laterally and vertically on the Teddd One departure and initially climb to 10,000; once issued "climb via" clearance to FL260 the aircraft will continue climb while complying with published restrictions.*

**11.** If it is necessary to assign an interim altitude or assign a bottom or top altitude not contained on a STAR or SID, the provisions of subparagraph 4–5–7h may be used in conjunction with subparagraph 4–5–7a.

***PHRASEOLOGY–***
*DESCEND VIA THE (STAR name and number) ARRIVAL EXCEPT AFTER (fix) MAINTAIN (revised altitude information).*

***EXAMPLE–***
*"United 454 descend via the Eagul Five Arrival, except after Geeno maintain one zero thousand."*

***NOTE–***
*The aircraft should track laterally and vertically on the Eagul Five Arrival and should descend so as to comply with all speed and altitude restrictions until reaching Geeno and then maintain 10,000. Upon reaching 10,000, aircraft should maintain 10,000 until cleared by ATC to continue to descend.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–7–1, Clearance Information.*
*AIM, Para 5–4–1, Standard Terminal Arrival (STAR) Procedures.*

***PHRASEOLOGY–***
*CLIMB VIA SID EXCEPT AFTER (waypoint name), MAINTAIN (altitude).*

***EXAMPLE–***
*"Climb via SID except after Baret, maintain flight level one niner zero."*

***NOTE–***
**1.** *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, and authorizes an unrestricted climb or descent. Speed restrictions remain in effect unless the controller explicitly cancels the speed restrictions.*

**2.** *Restate "climb/descend via" and then use "except" or "except maintain" phraseology to modify published restrictions or assign a new top/bottom altitude. Use "resume" phraseology with "maintain" to rejoin a route and assign a new altitude where compliance with published altitude restrictions is not required.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*
*FAA Order JO 7110.65, Para 5–6–2, Methods.*
*AIM, Para 4–4–10 Adherence to Clearance.*
*AIM, Para 5–2–8. Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID).*

**i.** When a pilot is unable to accept a clearance, issue revised instructions to ensure positive control and approved separation.

***NOTE–***
**1.** *14 CFR section 91.123 states that a pilot is not allowed to deviate from an ATC clearance "that has been obtained…unless an amended clearance is obtained" (except when an emergency exists).*

**2.** *A pilot is therefore expected to advise the controller if a clearance cannot be accepted when the clearance is issued. "We will try" and other such acknowledgements do not constitute pilot acceptance of an ATC clearance.*

**3.** *Controllers are expected to issue ATC clearances which conform with normal aircraft operational capabilities and do not require "last minute" amendments to ensure approved separation.*

**4.** *"Expedite" is not to be used in lieu of appropriate restrictions to ensure separation.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 10–1–3, Providing Assistance.*

## 4–5–8. ANTICIPATED ALTITUDE CHANGES

If practicable, inform an aircraft when to expect climb or descent clearance or to request altitude change from another facility.

***PHRASEOLOGY–***
*EXPECT HIGHER/LOWER IN (number of miles or minutes) MILES/MINUTES,*

*or*

*AT (fix). REQUEST ALTITUDE/FLIGHT LEVEL CHANGE FROM (name of facility).*

*If required,*

*AT (time, fix, or altitude).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–2–6, IFR Flight Progress Data.*

## 4–5–9. ALTITUDE CONFIRMATION– NONRADAR

**a.** Request a pilot to confirm assigned altitude on initial contact and when position reports are received unless:

***NOTE–***
*For the purpose of this paragraph, "initial contact" means a pilot's first radio contact with each sector/position.*

**1.** The pilot states the assigned altitude, or

**2.** You assign a new altitude to a climbing or descending aircraft, or

**3.** *TERMINAL.* The aircraft was transferred to you from another sector/position within your facility (intrafacility).

***PHRASEOLOGY–***
*(In level flight situations),*

*VERIFY AT (altitude/flight level).*

*(In climbing/descending situations),*

*(if aircraft has been assigned an altitude below the lowest useable flight level),*

*VERIFY ASSIGNED ALTITUDE (altitude).*

*(If aircraft has been assigned a flight level at or above the lowest useable flight level),*

*VERIFY ASSIGNED FLIGHT LEVEL (flight level).*

**b.** *USA.* Reconfirm all pilot altitude read backs.

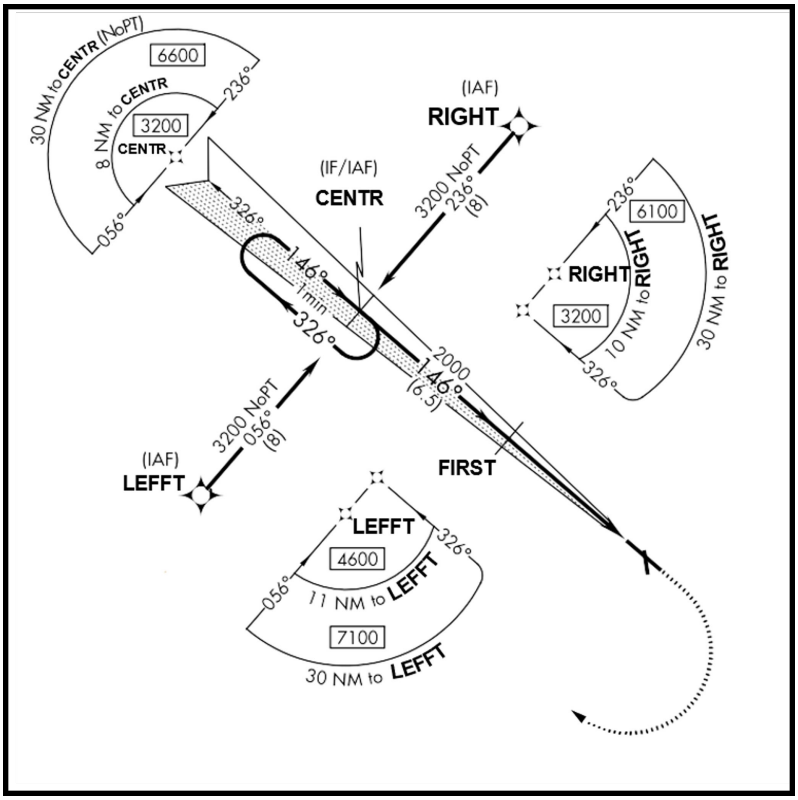
***PHRASEOLOGY–***
*(If altitude read back is correct),*
*AFFIRMATIVE (altitude).*

*(If altitude read back is not correct),*
*NEGATIVE. CLIMB/DESCEND AND MAINTAIN (altitude),*

*or*

*NEGATIVE. MAINTAIN (altitude).*

*FIG 4–8–7*
**Basic "T" and TAA Design with ILS**




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

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

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

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

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

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

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

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

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

*or*

*CLEARED APPROACH TO (airport name)*

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

## 4–8–3. RELAYED APPROACH CLEARANCE

*TERMINAL*

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

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

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

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

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

## 4–8–5. SPECIFYING ALTITUDE

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

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

## 4–8–6. CIRCLING APPROACH

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

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

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

*or*

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

***NOTE–***
*Where instrument approach procedures (IAPs) 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, an IAP may otherwise restrict circling approach maneuvers, and pilots cannot accept instructions that contradict published circling area restrictions.*

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

## 4–8–7. SIDE–STEP MANEUVER

*TERMINAL*

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

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

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

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

## 4–8–8. COMMUNICATIONS RELEASE

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

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

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

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

## 4–8–9. MISSED APPROACH

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

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

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

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

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

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

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

## 4–8–10. APPROACH INFORMATION

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

**a.** Initial approach altitude.

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

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

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

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

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

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

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

## 4–8–11. PRACTICE INSTRUMENT APPROACHES

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

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–9, Practice Instrument Approaches.*

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

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

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

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

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

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

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–9, Practice Instrument Approaches.*

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

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

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

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

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

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

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

**e.** Missed Approaches.

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

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

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

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

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

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

*"Maintain VFR, contact tower."*

*(Issue other instructions as appropriate.)*

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

# Section 5. Radar Separation

## 5–5–1. APPLICATION

**a.** Radar separation must be applied to all RNAV aircraft operating at and below FL450 on Q routes or random RNAV routes, excluding oceanic airspace.

EXCEPTION. GNSS-equipped aircraft /G, /L, /S, and /V on point-to-point routes, or transitioning between two point-to-point routes via an impromptu route.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–3–8, Aircraft Equipment Suffixes.*
*FAA Order JO 7110.65, TBL 2–3–10, Aircraft Equipment Suffixes.*
*FAA Order JO 7110.65, Para 4–4–1, Route Use.*
*AIM, Para 5–1–8, Area Navigation (RNAV).*
*AIM, Para 5–3–4, Area Navigation (RNAV) Routes.*
*P/CG Term – Global Navigation Satellite System (GNSS)[ICAO].*
*P/CG Term – Global Positioning Satellite/ Wide Area Augmentation Minimum En Route IFR Altitude (GPS/WAAS MEA).*
*P/CG Term – Parallel Offset Route.*

**b.** Radar separation may be applied between:

**1.** Radar identified aircraft.

**2.** An aircraft taking off and another radar identified aircraft when the aircraft taking off will be radar-identified within 1 mile of the runway end.

**3.** A radar-identified aircraft and one not radar-identified when either is cleared to climb/descend through the altitude of the other provided:

**(a)** The performance of the radar system is adequate and, as a minimum, primary radar targets or ASR–9/Full Digital Radar Primary Symbol targets are being displayed on the display being used within the airspace within which radar separation is being applied; and

**(b)** Flight data on the aircraft not radar-identified indicate it is a type which can be expected to give adequate primary/ASR–9/Full Digital Radar Primary Symbol return in the area where separation is applied; and

**(c)** The airspace within which radar separation is applied is not less than the following number of miles from the edge of the radar display:

**(1)** When less than 40 miles from the antenna– *6 miles;*

**(2)** When 40 miles or more from the antenna– *10 miles*;

**(3)** Narrowband radar operations– *10 miles;* and

**(d)** Radar separation is maintained between the radar-identified aircraft and all observed primary, ASR–9/Full Digital Radar Primary Symbol, and secondary radar targets until nonradar separation is established from the aircraft not radar identified; and

**(e)** When the aircraft involved are on the same relative heading, the radar-identified aircraft is vectored a sufficient distance from the route of the aircraft not radar identified to assure the targets are not superimposed prior to issuing the clearance to climb/descend.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–1–2, Exceptions.*
*FAA Order JO 7110.65, Para 4–4–1, Route Use.*
*FAA Order JO 7110.65, Para 5–3–1, Application.*
*FAA Order JO 7110.65, Para 5–5–8, Additional Separation for Formation Flights.*
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*

**4.** A radar-identified aircraft and one not radar-identified that is in transit from oceanic airspace or nonradar offshore airspace into an area of known radar coverage where radar separation is applied as specified in

paragraph 8–5–5, Radar Identification Application, until the transiting aircraft is radar-identified or the controller establishes other approved separation in the event of a delay or inability to establish radar identification of the transiting aircraft.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–2–6, IFR Flight Progress Data.*
*FAA Order JO 7110.65, Para 5–1–1, Presentation and Equipment Performance.*
*FAA Order JO 7110.65, Para 5–3–1, Application.*
*FAA Order JO 7110.65, Para 8–1–8, Use of Control Estimates.*
*FAA Order JO 7110.65, Para 8–5–5, Radar Separation.*

## 5–5–2. TARGET SEPARATION

Apply radar separation:

**a.** Between the centers of primary radar targets; however, do not allow a primary target to touch another primary target or a beacon control slash.

**b.** Between the ends of beacon control slashes.

**c.** Between the end of a beacon control slash and the center of a primary target.

**d.** All–digital displays. Between the centers of digital targets; do not allow digital targets to touch.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.*

## 5–5–3. TARGET RESOLUTION

**a.** A process to ensure that correlated radar targets or digitized targets do not touch.

**b.** Mandatory traffic advisories and safety alerts must be issued when this procedure is used.

***NOTE–***
*This procedure must not be provided utilizing mosaic radar systems.*

**c.** Target resolution must be applied as follows:

**1.** Between the edges of two primary targets or the edges of primary digitized targets.

**2.** Between the end of the beacon control slash and the edge of a primary target or primary digitized target.

**3.** Between the ends of two beacon control slashes.

## 5–5–4. MINIMA

Separate aircraft by the following minima:

**a.** *TERMINAL*. Single Sensor ASR or Digital Terminal Automation System (DTAS):

***NOTE–***
**1.** *Includes single sensor long range radar mode.*
**2.** *ADS–B and WAM are not selectable sources when in Single Sensor Mode.*

**1.** When less than 40 miles from the antenna– *3 miles*.

**2.** When 40 miles or more from the antenna– *5 miles*.

**3.** For single sensor monopulse secondary surveillance radar (MSSR), when less than 60 miles from the antenna– *3 miles*.

**4.** If TRK appears in the data block, handle in accordance with paragraph 5–3–7, Identification Status, subparagraph b, and take appropriate steps to establish nonradar separation.

***NOTE–***
*TRK appears in the data block whenever the aircraft is being tracked by a radar site other than the radar currently selected.*

*Current equipment limitations preclude a target from being displayed in the single sensor mode; however, a position symbol and data block, including altitude information, will still be displayed. Therefore, low altitude alerts must be provided in accordance with paragraph 2−1−6, Safety Alert.*

**b.** *TERMINAL*. FUSION:

**1.** Fusion target symbol – *3 miles.*

**2.** When displaying ISR in the data block- *5 miles.*

***NOTE−***
*In the event of an unexpected ISR on one or more aircraft, the ATCS working that aircraft must transition from 3-mile to 5-mile separation, or establish some other form of approved separation as soon as feasible. This action must be timely, but taken in a reasonable fashion, using the controller's best judgment, as not to reduce safety or the integrity of the traffic situation. For example, if ISR appears when an aircraft is established on final with another aircraft on short final, it would be beneficial from a safety perspective to allow the trailing aircraft to continue the approach and land rather than terminate a stabilized approach.*

**3.** If TRK appears in the data block, handle in accordance with paragraph 5−3−7, Identification Status, subparagraph b, and take appropriate steps to establish nonradar separation.

**4.** The ADS-B Computer Human Interface (CHI) may be implemented by facilities on a sector by sector or facility wide basis when the determination is made that utilization of the ADS-B CHI provides an operational advantage to the controller.

**c.** STARS Multi−Sensor Mode – 5 miles.

***NOTE−***
*STARS Multi−Sensor Mode displays target symbols derived from radar, ADS−B, and WAM.*

**d.** ERAM:

**1.** Below FL 600- *5 miles.*

**2.** At or above FL 600- *10 miles.*

**3.** Up to and including FL 230 where all the following conditions are met – *3 miles:*

**(a)** Within the 3 NM separation area, and:

**(1)** Within 40 NM of the preferred radar; or

**(2)** Within 60 NM of the preferred radar when using an MSSR; or

**(3)** When operating in track−based display mode.

**(b)** The preferred sensor and/or ADS−B is providing reliable targets.

**(c)** Facility directives specifically define the 3 NM separation area.

**(d)** The 3 NM separation area is displayable on the video map.

**(e)** Involved aircraft are displayed using the 3 NM target symbol.

***NOTE−***
*ADS−B allows the expanded use of 3 NM separation in approved areas. It is not required for and does not affect the use of radar for 3 NM separation.*

**4.** When transitioning from terminal to en route control, 3 miles increasing to 5 miles or greater, provided:

**(a)** The aircraft are on diverging routes/courses, and/or

**(b)** The leading aircraft is and will remain faster than the following aircraft; and

**(c)** Separation constantly increasing and the first center controller will establish 5 NM or other appropriate form of separation prior to the aircraft departing the first center sector; and

**(d)** The procedure is covered by a letter of agreement between the facilities involved and limited to specified routes and/or sectors/positions.

***REFERENCE–***
*FAA Order JO 7210.3, Para 8–2–1, Three Mile Airspace Operations.*

**e.** MEARTS Mosaic Mode:

**1.** Below FL 600- *5 miles.*

**2.** At or above FL 600- *10 miles.*

**3.** For areas meeting all of the following conditions – *3 miles*:

**(a)** Radar site adaptation is set to single sensor mode.

***NOTE–***
**1.** *Single Sensor Mode displays information from the radar input of a single site.*

**2.** *Procedures to convert MEARTS Mosaic Mode to MEARTS Single Sensor Mode at each PVD/MDM will be established by facility directive.*

**(b)** Significant operational advantages can be obtained.

**(c)** Within 40 NM of the sensor or within 60 NM of the sensor when using an MSSR and within the 3 NM separation area.

**(d)** Up to and including FL230.

**(e)** Facility directives specifically define the area where the separation can be applied and define the requirements for displaying the area on the controller's PVD/MDM.

**4.** MEARTS Mosaic Mode Utilizing Single Source Polygon (San Juan CERAP and Honolulu Control Facility only) when meeting all of the following conditions– *3 miles*:

**(a)** Up to and including FL230 within 40 miles from the antenna or within 60 NM when using an MSSR and targets are from the adapted sensor.

**(b)** The single source polygon must be displayed on the controller's PVD/MDM.

**(c)** Significant operational advantages can be obtained.

**(d)** Facility directives specifically define the single source polygon area where the separation can be applied and specify procedures to be used.

**(e)** Controller must commence a transition to achieve either vertical separation or 5 mile lateral separation in the event that either target is not from the adapted sensor.

## WAKE TURBULENCE APPLICATION

***NOTE–***
*Wake turbulence procedures specify increased separation minima required for certain categories of aircraft because of the possible effects of wake turbulence.*

**f.** *EN ROUTE.* Provide wake turbulence separation as follows:

**1.** Separate aircraft operating directly behind, following an aircraft conducting an instrument approach and/or operating within 2,500 feet and less than 1,000 feet below, by the following:

**(a)** Behind super – *5 miles,* unless the super is operating at or below FL240 and below 250 knots, then:

**(1)** Heavy - *6 miles.*

**(2)** Large - *7 miles.*

**(3)** Small - *8 miles.*

**(b)** Behind heavy:

**(1)** Heavy - *4 miles.*

**(2)** Large or small - *5 miles.*

**2.** Separate a small aircraft behind a B757 – *4 miles* when operating directly behind, following a B757 conducting an instrument approach and/or operating within 2,500 feet and less than 500 feet below.

**3.** Separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the minima below will exist at the time the preceding aircraft is over the landing threshold. If the landing threshold cannot be determined, the minima should be applied as constant or increasing at the closest point that can be determined prior to the landing threshold.

**(a)** Small behind large – *4 miles*.

**(b)** Small behind heavy – *6 miles*.

***NOTE–***
*Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.*

**WAKE TURBULENCE APPLICATION**

**g.** *TERMINAL.* Separate aircraft by the minima specified in TBL 5−5−1 in accordance with the following:

**1.** When following an aircraft conducting an instrument approach and/or operating within 2,500 feet and less than 1,000 feet below the flight path of a Category A, B, C, or D aircraft.

**2.** When following an aircraft conducting an instrument approach and/or operating within 2,500 feet and/or less than 500 feet below a Category E aircraft.

**3.** When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a Category I aircraft departs the parallel runway behind a Category E aircraft. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the Category I aircraft to pass behind the Category E aircraft.

***NOTE–***
**1.** *The application of paragraph 5−8−3, Successive or Simultaneous Departures, satisfies this requirement.*

**2.** *Consider runways separated by less than 700 feet as a single runway because of the possible effects of wake turbulence.*

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

***TBL 5−5−1***
**Wake Turbulence Separation for Directly Behind**

| | | FOLLOWER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** |
| **LEADER** | **A** | | 5 NM | 6 NM | 6 NM | 7 NM | 7 NM | 7 NM | 8 NM | 8 NM |
| | **B** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 5 NM |
| | **C** | | | | | 3.5 NM | 3.5 NM | 3.5 NM | 5 NM | 5 NM |
| | **D** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 5 NM |
| | **E** | | | | | | | | | 4 NM |
| | **F** | | | | | | | | | |
| | **G** | | | | | | | | | |
| | **H** | | | | | | | | | |
| | **I** | | | | | | | | | |

**h.** *TERMINAL.* ON APPROACH. In addition to subparagraph g, separate an aircraft on approach behind another aircraft to the same runway by ensuring the separation minima in TBL 5−5−2 will exist at the time the preceding aircraft is over the landing threshold.

***NOTE–***
*Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.*

***TBL 5–5–2***
**Wake Turbulence Separation for On Approach**

| | | FOLLOWER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** |
| **LEADER** | **A** | | 5 NM | 6 NM | 6 NM | 7 NM | 7 NM | 7 NM | 8 NM | 8 NM |
| | **B** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 6 NM |
| | **C** | | | | | 3.5 NM | 3.5 NM | 3.5 NM | 5 NM | 6 NM |
| | **D** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 6 NM | 6 NM |
| | **E** | | | | | | | | | 4 NM |
| | **F** | | | | | | | | | 4 NM |
| | **G** | | | | | | | | | |
| | **H** | | | | | | | | | |
| | **I** | | | | | | | | | |

**i.** *TERMINAL*. When NOWGT is displayed in an aircraft data block, provide *10 miles* separation behind the preceding aircraft and *10 miles* separation to the succeeding aircraft.

***INTERPRETATION–***
*7110.65, 5–5–4, Minima, Wake Turbulence Minima Application (2–23–2023)*
*7110.65, 5–5–4h, Minima (2–21–2023)*

**j.** *TERMINAL*. 2.5 nautical miles (NM) separation is authorized between aircraft established on the final approach course within 10 NM of the landing runway when operating in FUSION, or single sensor slant range mode if the aircraft remains within 40 miles of the antenna and:

**1.** Wake turbulence separation must be applied in accordance with TBL 5–5–2;

**2.** An average runway occupancy time of 50 seconds or less is documented;

**3.** CTRDs are operational and used for quick glance references;

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*

**4.** Turnoff points are visible from the control tower.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–19, Wake Turbulence.*
*FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation.*
*FAA Order JO 7110.65, Para 5–5–7, Passing or Diverging.*
*FAA Order JO 7110.65, Para 5–5–9, Separation from Obstructions.*
*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*
*FAA Order JO 7110.65, Para 7–6–7, Sequencing.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65 Para 7–8–3, Separation.*
*FAA Order JO 7210.3, Para 10–4–14, Reduced Separation on Final.*

## 5–5–5. VERTICAL APPLICATION

Aircraft not laterally separated, may be vertically separated by one of the following methods:

**a.** Assign altitudes to aircraft, provided valid Mode C altitude information is monitored and the applicable separation minima is maintained at all times.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima.*

*FAA Order JO 7110.65, Para 5–2–15, Validation of Mode C Altitude Readout.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65, Para 7–8–3, Separation.*
*FAA Order JO 7110.65, Para 7–9–4, Separation.*

**b.** Assign an altitude to an aircraft after the aircraft previously at that altitude has been issued a climb/descent clearance and is observed (valid Mode C), or reports leaving the altitude.

***NOTE–***
**1.** *Consider known aircraft performance characteristics, pilot furnished and/or Mode C detected information which indicate that climb/descent will not be consistent with the rates recommended in the AIM.*

**2.** *It is possible that the separation minima described in paragraph 4–5–1, Vertical Separation Minima, paragraph 7–7–3, Separation, paragraph 7–8–3, Separation, or paragraph 7–9–4, Separation, might not always be maintained using subparagraph b. However, correct application of this procedure will ensure that aircraft are safely separated because the first aircraft must have already vacated the altitude prior to the assignment of that altitude to the second aircraft.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–3, Procedural Preference.*
*FAA Order JO 7110.65, Para 4–5–1, Vertical Separation Minima.*
*FAA Order JO 7110.65, Para 5–2–15, Validation of Mode C Altitude Readout.*
*FAA Order JO 7110.65, Para 6–6–1, Application.*

## 5–5–6. EXCEPTIONS

**a.** Do not use Mode C to effect vertical separation with an aircraft on a cruise clearance, contact approach, or as specified in paragraph 5–14–4, System Requirements, subparagraph f3.

***REFERENCE–***
*FAA Order JO 7110.65, Para 6–6–2, Exceptions.*
*FAA Order JO 7110.65, Para 7–4–7, Contact Approach.*
*P/CG Term – Cruise.*

**b.** Assign an altitude to an aircraft only after the aircraft previously at that altitude is observed at or passing through another altitude separated from the first by the appropriate minima when:

**1.** Severe turbulence is reported.

**2.** Aircraft are conducting military aerial refueling.

***REFERENCE–***
*FAA Order JO 7110.65, Para 9–2–13, Military Aerial Refueling.*

**3.** The aircraft previously at that altitude has been issued a climb/descent at pilot's discretion.

**c.** *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.

## 5–5–7. PASSING OR DIVERGING

**a.** *TERMINAL*. In accordance with the following criteria, all other approved separation may be discontinued and passing or diverging separation applied when:

**1.** Single Site ASR or FUSION Mode

**(a)** Aircraft are on opposite/reciprocal courses and you have observed that they have passed each other; or aircraft are on same or crossing courses/assigned radar vectors and one aircraft has crossed the projected course of the other, and the angular difference between their courses/assigned radar vectors is at least 15 degrees.

***NOTE–***
*Two aircraft, both assigned courses and/or radar vectors with an angular difference of at least 15 degrees, is considered a correct application of this paragraph.*

**(b)** The tracks are monitored to ensure that the primary targets, beacon control slashes, FUSION target symbols, or full digital terminal system primary and/or beacon target symbols will not touch.

***REFERENCE–***
*FAA Order JO 7110.65, Para 1–2–2, Course Definitions.*

**2.** Single Site ARSR or FUSION Mode when target refresh is only from an ARSR or when in FUSION Mode – ISR is displayed.

**(a)** Aircraft are on opposite/reciprocal courses and you have observed that they have passed each other; or aircraft are on same or crossing courses/assigned radar vectors and one aircraft has crossed the projected course of the other, and the angular difference between their courses/assigned radar vectors is at least 45 degrees.

***NOTE–***
*Two aircraft, both assigned courses and/or radar vectors with an angular difference of at least 45 degrees, is considered a correct application of this paragraph.*

**(b)** The tracks are monitored to ensure that the primary targets, beacon control slashes, FUSION target symbols, or full digital terminal system primary and/or beacon target symbols will not touch.

**3.** Although approved separation may be discontinued, the requirements of paragraph 5–5–4, Minima, subparagraph g must be applied when wake turbulence separation is required.

***REFERENCE–***
*FAA Order JO 7110.65, Para 1–2–2, Course Definitions.*

**b.** *EN ROUTE*, *TERMINAL (when STARS Multi–Sensor Mode is selected)*. Vertical separation between aircraft may be discontinued when they are on opposite courses as defined in paragraph 1–2–2, Course Definitions; and

**1.** You are in communications with both aircraft involved; and

**2.** You tell the pilot of one aircraft about the other aircraft, including position, direction, type; and

**3.** One pilot reports having seen the other aircraft and that the aircraft have passed each other; and

**4.** You have observed that the radar targets have passed each other; and

**5.** You have advised the pilots if either aircraft is classified as a super or heavy aircraft.

**6.** Although vertical separation may be discontinued, the requirements of paragraph 5–5–4, Minima, subparagraph g must be applied when wake turbulence separation is required.

***EXAMPLE–***
*"Traffic, twelve o'clock, Boeing Seven Twenty Seven, opposite direction. Do you have it in sight?"*

*(If the answer is in the affirmative):*

*"Report passing the traffic."*

*(When pilot reports passing the traffic and the radar targets confirm that the traffic has passed, issue appropriate control instructions.)*

## 5–5–8. ADDITIONAL SEPARATION FOR FORMATION FLIGHTS

Because of the distance allowed between formation aircraft and lead aircraft, additional separation is necessary to ensure the periphery of the formation is adequately separated from other aircraft, adjacent airspace, or obstructions. Provide supplemental separation for formation flights as follows:

**a.** Separate a standard formation flight by adding 1 mile to the appropriate radar separation minima.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–13, Formation Flights.*
*FAA Order JO 7110.65, Para 5–5–1, Application.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*P/CG Term – Formation Flight.*

**b.** Separate two standard formation flights from each other by adding 2 miles to the appropriate separation minima.

**c.** Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation or from the outermost aircraft of the nonstandard formation whichever applies.

**d.** If necessary for separation between a nonstandard formation and other aircraft, assign an appropriate beacon code to each aircraft in the formation or to the first and last aircraft in-trail.

***NOTE–***
*The additional separation provided in paragraph 5–5–8, Additional Separation for Formation Flights, is not normally added to wake turbulence separation when a formation is following a heavier aircraft since none of the formation aircraft are likely to be closer to the heavier aircraft than the lead aircraft (to which the prescribed wake turbulence separation has been applied).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 9–2–13 , Military Aerial Refueling.*

## 5–5–9. SEPARATION FROM OBSTRUCTIONS

**a.** TERMINAL. Separate aircraft from prominent obstructions depicted on the radar display by the following minima:

**1.** When less than 40 miles from the antenna– *3 miles.*

**2.** When 40 miles or more from the antenna– *5 miles.*

**3.** For single sensor MSSR, when less than 60 miles from the antenna – *3 miles.*

**4.** FUSION:

**(a)** Fusion target symbol – *3 miles*.

**(b)** When ISR is displayed – *5 miles*.

***NOTE–***
*When operating in FUSION, distances from the antenna listed in paragraph 5–5–9, a1 through a3, do not apply.*

**5.** STARS Multi–Sensor Mode – *5 miles.*

**b.** TERMINAL. Vertical separation of aircraft above a prominent obstruction depicted on the radar display and contained within a buffer area may be discontinued after the aircraft has passed the obstruction.

**c.** EAS. Apply the radar separation minima specified in paragraph 5–5–4, Minima.

## 5–5–10. ADJACENT AIRSPACE

**a.** If coordination between the controllers concerned has not been effected, separate radar-controlled aircraft from the boundary of adjacent airspace in which radar separation is also being used by the following minima:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–14 , Coordinate Use of Airspace.*

**1.** When less than 40 miles from the antenna– *1 $^{1}/_{2}$ miles.*

**2.** When 40 miles or more from the antenna– *2 $^{1}/_{2}$ miles.*

**3.** *EAS:*

**(a)** Below Flight Level 600– *2 $^{1}/_{2}$ miles*.

**(b)** Flight Level 600 and above– *5 miles*.

**b.** Separate radar-controlled aircraft from the boundary of airspace in which nonradar separation is being used by the following minima:

**1.** When less than 40 miles from the antenna– *3 miles*.

**2.** When 40 miles or more from the antenna– *5 miles*.

**3.** *EAS:*

**(a)** Below Flight Level 600– *5 miles.*

**(b)** Flight Level 600 and above– *10 miles.*

**c.** The provisions of subparagraphs a and b do not apply to VFR aircraft being provided Class B, Class C, or TRSA services. Ensure that the targets of these aircraft do not touch the boundary of adjacent airspace.

**d.** VFR aircraft approaching Class B, Class C, Class D, or TRSA airspace which is under the control jurisdiction of another air traffic control facility should either be provided with a radar handoff or be advised that radar service is terminated, given their position in relation to the Class B, Class C, Class D, or TRSA airspace, and the ATC frequency, if known, for the airspace to be entered. These actions should be accomplished in sufficient time for the pilot to obtain the required ATC approval prior to entering the airspace involved, or to avoid the airspace.

## 5–5–11. EDGE OF SCOPE

Separate a radar-controlled aircraft climbing or descending through the altitude of an aircraft that has been tracked to the edge of the scope/display by the following minima until nonradar separation has been established:

**a.** When less than 40 miles from the antenna– *3 miles* from edge of scope.

**b.** When 40 miles or more from the antenna– *5 miles* from edge of scope.

**c.** *EAS:*

**1.** Below Flight Level 600– *5 miles*.

**2.** Flight Level 600 and above– *10 miles*.

## 5–5–12. BEACON TARGET DISPLACEMENT

When using a radar target display with a previously specified beacon target displacement to separate a beacon target from a primary target, adjacent airspace, obstructions, or terrain, add a 1 mile correction factor to the applicable minima. The maximum allowable beacon target displacement which may be specified by the facility air traffic manager is $^{1}/_{2}$ mile.

***REFERENCE–***
*FAA Order JO 7210.3, Para 3–6–4, Monitoring of Mode 3/A Radar Beacon Codes.*

**3.** Informed of its position unless the aircraft is RNAV, FMS, or DME equipped and being vectored toward a VORTAC/TACAN or waypoint and within the service volume of the NAVAID.

***PHRASEOLOGY–***
*(Position with respect to course/fix along route),*
*RESUME OWN NAVIGATION,*

*or*

*FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix),*

*or*
*RESUME (SID/STAR/transition/procedure).*

***REFERENCE–***
*FAA Order JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.*
*FAA Order JO 7110.65, Para 4–5–7, Altitude Information.*

**f.** Aircraft instructed to resume a procedure which contains published crossing restrictions (SID/STAR) must be issued/reissued all applicable restrictions or be instructed to Climb Via/Descend Via.

***PHRASEOLOGY–***
*CLEARED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude), then CLIMB VIA/DESCEND VIA (SID/STAR)*

***EXAMPLE–***
*"Cleared direct Luxor, then descend via the Ksino One arrival."*
*"Cleared direct HITME, cross HITME at or above one one thousand, then climb via the Boach Five departure."*

**g.** Aircraft may not be vectored off an Obstacle Departure Procedure (ODP), or issued an altitude lower than published altitude on an ODP, until at or above the MVA/MIA, at which time the ODP is canceled.

***NOTE–***
*Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is canceled and ATC cannot clear the aircraft to resume the ODP.*

***REFERENCE–***
*P/CG – Obstacle Departure Procedure.*

**h.** Aircraft vectored off an RNAV route must be recleared to the next waypoint or as requested by the pilot.

**i.** When flight data processing is available, update the route of flight in the computer unless an operational advantage is gained and coordination is accomplished.

**j.** Inform the pilot when a vector will take the aircraft across a previously assigned nonradar route.

***PHRASEOLOGY–***
*EXPECT VECTOR ACROSS (NAVAID radial) (airway/route/course) FOR (purpose).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–6–1, Application.*

## 5–6–3. VECTORS BELOW MINIMUM ALTITUDE

**a.** TERMINAL. As described in facility directives, when vectoring a departing IFR aircraft, or one executing a missed approach, when ISR is not displayed in the full data block and before it reaches the minimum altitude for IFR operations if separation from prominent obstacles shown on the radar scope is applied in accordance with one of the following:

**1.** The flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle, or;

**2.** The flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle, or;

**3.** Radar facilities may vector aircraft below the MVA/MIA, provided:

**(a)** No prominent obstacles are within 10 NM of the departure end of runway (DER).

**(b)** Aircraft must be allowed an uninterrupted climb to meet the MVA/MIA within 10 NM of the DER.

***NOTE–***
*ATC assumes responsibility for terrain and obstacle avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/missed approach procedures, or if issued go-around instructions, except after conducting a visual approach. ATC does not assume this responsibility when utilizing a Diverse Vector Area (DVA) or when operating on SIDs with or without a published range of headings in the departure route description.*

**b.** After reaching the first MVA/MIA sector, all subsequent MVA/MIA sectors encountered must be met.

***REFERENCE–***
*P/CG Term – Obstacle.*
*P/CG Term – Obstruction.*
*P/CG Term – Prominent Obstacle.*

**c.** At those locations where diverse vector areas (DVA) have been established, radar facilities may vector aircraft below the MVA/MIA within the DVA described in facility directives.

**d.** At those locations using radar SIDs, radar facilities may vector aircraft below the MVA/MIA, in accordance with facility directives.

**e.** At locations that vector aircraft conducting a go–around or missed approach, use authorized headings and display those prominent obstacles stipulated in facility directives until reaching the MVA/MIA.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–8–1, Procedures.*
*FAA Order JO 7210.3, Para 3–8–6, Establishing Diverse Vector Area/s (DVA).*
*FAA Order JO 7210.3, Para 10–3–16, Go–Around/Missed Approach.*

# Section 8. Radar Departures

## 5–8–1. PROCEDURES

**a.** When vectoring a departing aircraft on a radar SID, concurrent use of a diverse vector area (DVA) is not permitted.

**b.** When the departure route description on a radar SID contains the phrase, "Fly assigned heading," "as assigned by ATC," or similar phrases, with a published range of headings in the route description, assign headings or vectors as needed not to exceed those headings in the published range until reaching the MVA/MIA.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.*

## 5–8–2. INITIAL HEADING

**a.** Before departure, assign the initial heading consistent with either a SID being flown or DVA, if applicable, when a departing aircraft is to be vectored immediately after takeoff. At locations that have a DVA, concurrent use of both a SID and DVA is not permitted.

***PHRASEOLOGY–***
*FLY RUNWAY HEADING.*
*TURN LEFT/RIGHT, HEADING (degrees).*

***NOTE–***
**1.** *TERMINAL. A purpose for the heading is not necessary, since pilots operating in a radar environment associate assigned headings with vectors to their planned route of flight.*

**2.** *ATC assumes responsibility for terrain and obstacle avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/missed approach procedures, or if issued go–around instructions, except after conducting a visual approach. ATC does not assume this responsibility when utilizing a Diverse Vector Area (DVA) or when operating on SIDs with or without a published range of headings in the departure route description.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–3–2, Departure Clearances.*
*FAA Order JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.*

**b.** At locations with both SIDs and DVAs, an amended departure clearance is required to cancel a previously assigned SID and subsequently utilize a DVA or vice versa. The amended clearance must be provided to the pilot in a timely manner so that the pilot may brief the changes in advance of entering the runway.

**c.** Issue an altitude to maintain with the initial heading when the heading will take the aircraft off a departure procedure that contains both a published lateral path to a waypoint and crossing restrictions.

**d.** When conducting simultaneous parallel runway departures utilizing RNAV SIDs, advise aircraft of the initial fix/waypoint on the RNAV route.

***PHRASEOLOGY–***
*RNAV to (fix/waypoint), RUNWAY (number), CLEARED FOR TAKEOFF.*

***EXAMPLE–***
*"RNAV to MPASS, Runway Two–Six Left, cleared for takeoff."*

***NOTE–***
**1.** *TERMINAL. A purpose for an initial waypoint advisory is not necessary since pilots associate this advisory with the flight path to their planned route of flight. Pilots must immediately advise ATC if a different RNAV SID is entered in the aircraft FMS.*

**2.** *The SID transition is not restated as it is contained in the ATC clearance.*

**3.** *Aircraft cleared via RNAV SIDs designed to begin with a vector to the initial waypoint are assigned a heading before departure.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–9, Nonintersecting Converging Runway Operations.*
*FAA Order JO 7110.65, Para 4–3–2, Departure Clearances.*
*AIM, Para 5–2–7, Departure Control.*

## 5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

*TERMINAL*

Separate aircraft departing from the same airport/heliport/vertiport or adjacent airports/heliports/vertiports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad/vertipad and courses will diverge by at least the minimum required, as stated below.

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures.*
*FAA Order JO 7110.65, Para 3–9–8, Intersecting Runway/Intersecting Flight Path Operations.*
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.*

***NOTE–***
**1.** *FAA Order 8260.46, Departure Procedure (DP) Program, and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 4, establishes guidelines for IFR departure turning procedures which assumes a climb to 400 feet above the departure end of runway (DER) elevation before a turn is commenced. TERPS criteria ensures obstacle clearance with a climb gradient of 200 feet per nautical mile from the DER. "Immediately after departure" is considered to be any turn that provides at least the minimum required divergence that commences no later than 2 miles from the DER.*

**2.** *Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.*

**3.** *When one or both of the departure surfaces is a helipad/vertipad, use the takeoff course as a reference, comparable to the centerline of a runway and the helipad/vertipad center as the threshold.*

**a.** Between successive departures from the same runway/helipad/vertipad or parallel runways/takeoff courses separated by less than 2,500 feet– *1 mile* if courses diverge by 15 degrees or more immediately after departure. (See FIG 5–8–1, FIG 5–8–2, and FIG 5–8–3.)

***FIG 5–8–1***
**Successive Departures**

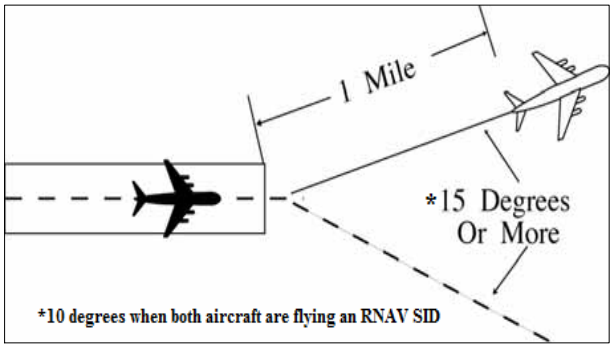


*FIG 5−8−2*
**Simultaneous Departures**

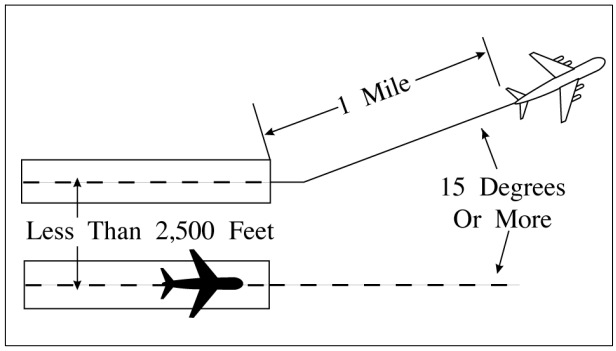
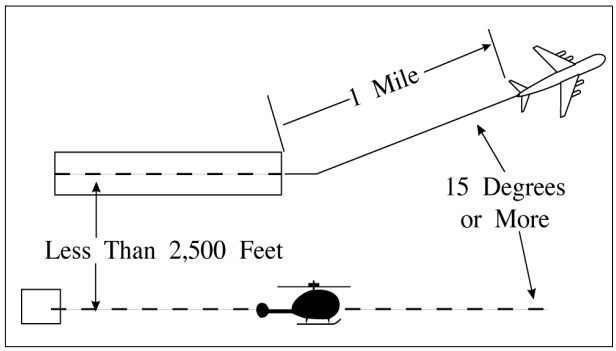



*FIG 5−8−3*
**Simultaneous Departures**




***NOTE−***
*This procedure does not apply when wake turbulence separation is required.*

**b.** Between simultaneous departures departing in the same direction from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 15 degrees or more immediately after departure. (See FIG 5−8−5, and FIG 5−8−6.)

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−5−4, Minima, Subparagraph f.*

**c.** When both aircraft are flying an RNAV SID:

**1.** Between successive departures from the same runway− *1 mile* if courses diverge by 10 degrees or more immediately after departure. (See FIG 5−8−1.)

***NOTE−***
*This procedure does not apply when wake turbulence separation is required.*

**2.** Between simultaneous departures from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 700 feet and less than 2,500 feet, courses diverge by 15 degrees or more, and departures are released in accordance with the release distance stagger stated in TBL 5−8−1 below.

*TBL 5–8–1*

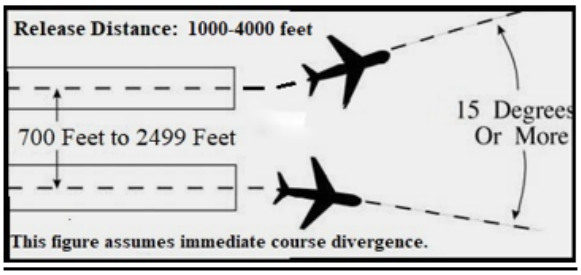
**Departure Release Distances**

| Distance to Divergence (Measured from the further DER) | Minimum Centerline Separation | Release Distance Stagger |
|---|---|---|
| Immediately | 700 | 1000 feet |
| No later than 5 NM | 1020 | 2000 feet |
| No later than 8 NM | 1130 | 3000 feet |
| No later than 11 NM | 1360 | 4000 feet |

***NOTE–***
*This procedure does not apply when wake turbulence separation is required.*

*FIG 5–8–4*

**Simultaneous Dependent Departures**




**3.** Between simultaneous departures from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

***NOTE–***
*RNAV SIDs specific to this paragraph are those SIDs constructed with a specific lateral path that begins at the DER.*

*FIG 5–8–5*

**Parallel Runway Departures**

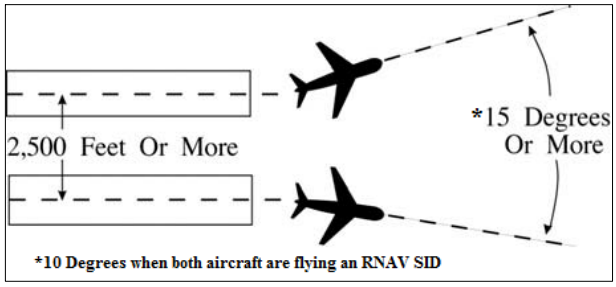
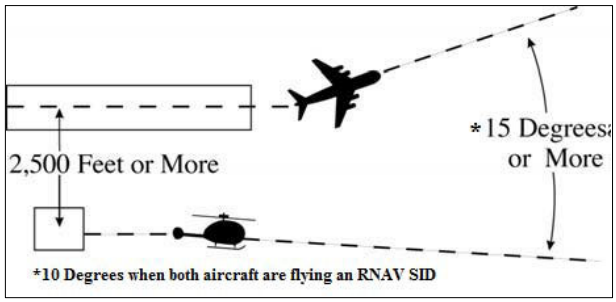



*FIG 5–8–6*

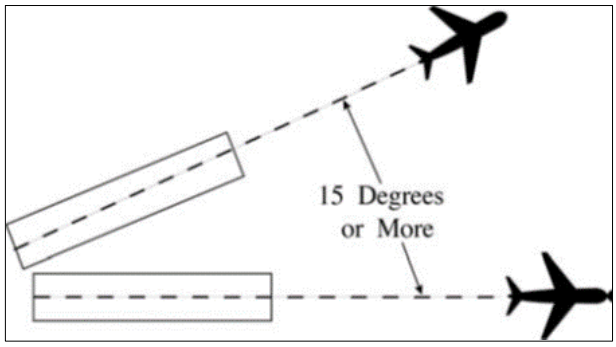
**Parallel Helipad/Vertipad Course Departures**



**d.** Between aircraft departing from diverging runways:

**1.** Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG 5−8−7.)

*FIG 5−8−7*
**Nonintersecting Runway Departures**




**2.** Intersecting runways and/or takeoff courses that diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3−9−5, Anticipating Separation. (See FIG 5−8−8 and FIG 5−8−9.)

*FIG 5−8−8*
**Intersecting Runway Departures**

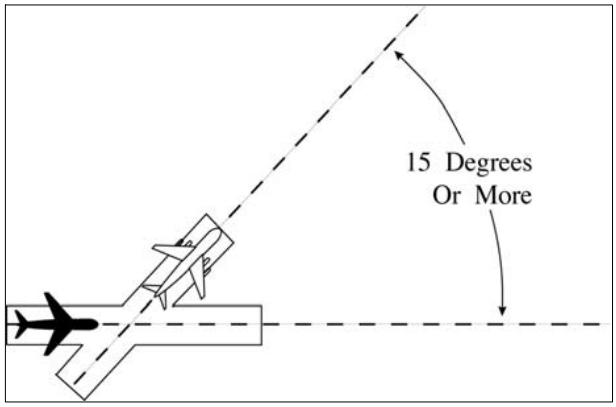
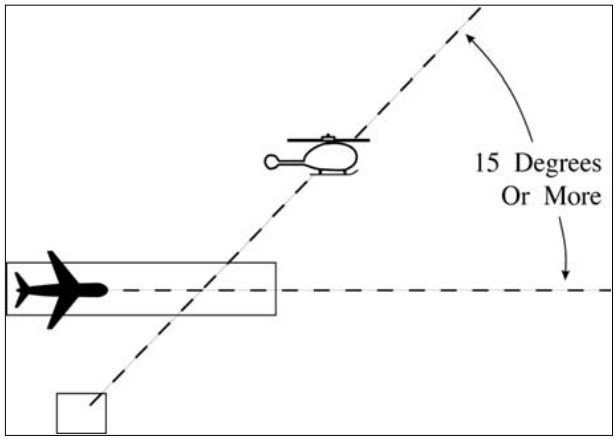



*FIG 5−8−9*
**Intersecting Helipad/Vertipad Course Departures**



***NOTE–***
*This procedure does not apply when wake turbulence separation is required.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subparagraph f.*

## 5–8–4. DEPARTURE AND ARRIVAL

*TERMINAL.* Except as provided in paragraph 5–8–5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways, separate a departing aircraft from an arriving aircraft on final approach by a minimum of *2 miles* if separation will increase to a minimum of 3 miles (5 miles when 40 miles or more from the antenna) within 1 minute after takeoff.

***NOTE–***
**1.** *This procedure permits a departing aircraft to be released so long as an arriving aircraft is no closer than 2 miles from the runway at the time. This separation is determined at the time the departing aircraft commences takeoff roll.*

**2.** *Consider the effect surface conditions, such as ice, snow, and other precipitation, may have on known aircraft performance characteristics, and the influence these conditions may have on the pilot's ability to commence takeoff roll in a timely manner.*

## 5–8–5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS

*TERMINAL.* Authorize simultaneous operations between an aircraft departing on a runway and an aircraft on final approach to another parallel or nonintersecting diverging runway if the departure course diverges immediately by at least 30 degrees from the missed approach course until separation is applied and provided one of the following conditions is met:

***NOTE–***
*When one or both of the takeoff/landing surfaces is a helipad or vertipad, consider the takeoff course as the runway centerline and the helipad/vertipad center as the threshold.*

**a.** When parallel runway thresholds are even, the runway centerlines are at least 2,500 feet apart. (See FIG 5–8–10 and FIG 5–8–11.)

***FIG 5–8–10***
**Parallel Thresholds are Even**

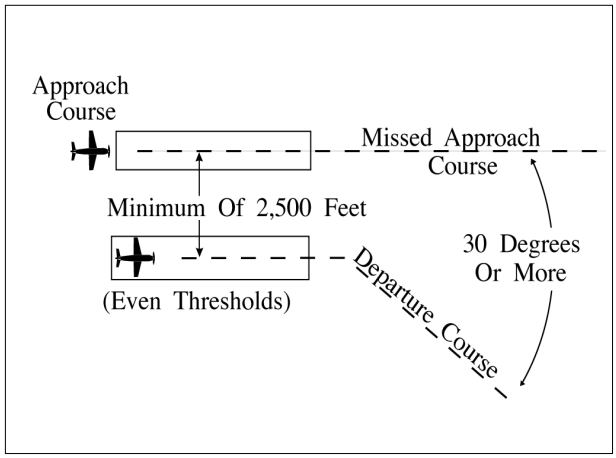
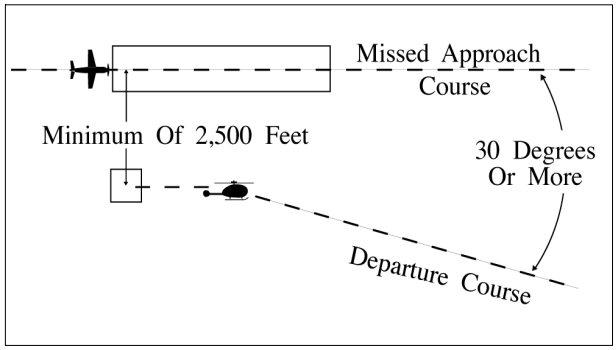


*FIG 5−8−11*
**Parallel Thresholds are Even**




**b.** When parallel runway thresholds are staggered and:

**1.** The arriving aircraft is approaching the nearer runway: the centerlines are at least 1,000 feet apart and the landing thresholds are staggered at least 500 feet for each 100 feet less than 2,500 the centerlines are separated. (See FIG 5−8−12 and FIG 5−8−13.)

*FIG 5−8−12*
**Parallel Thresholds are Staggered**

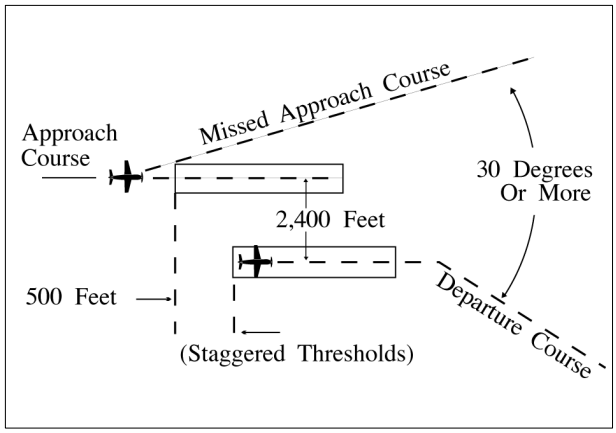
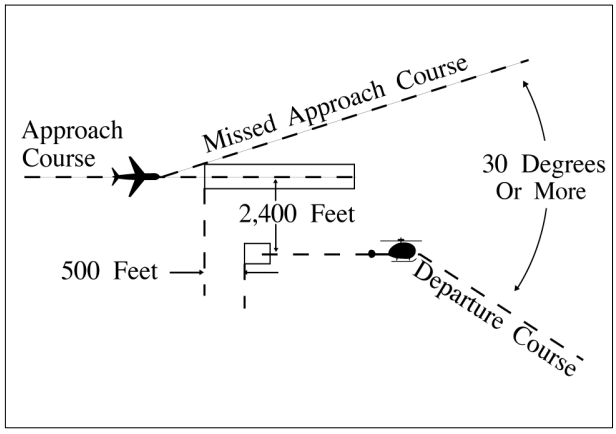



*FIG 5−8−13*
**Parallel Thresholds are Staggered**




***NOTE−***
*In the event of a missed approach by an aircraft requiring wake turbulence separation behind it, apply the procedures in*

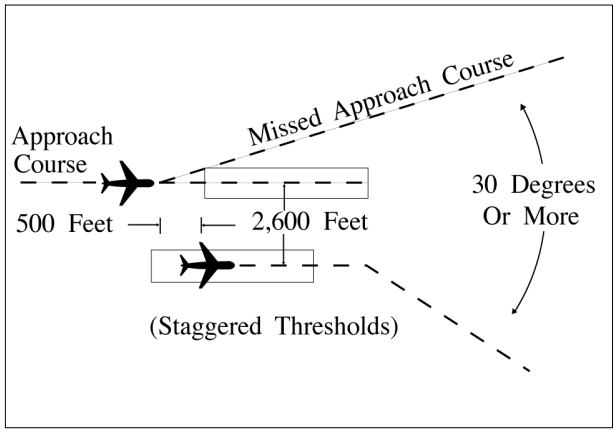
*paragraph 3–9–6, Same Runway Separation and/or paragraph 3–9–8, Intersecting Runway/Intersecting Flight Path Operations to ensure that the larger aircraft does not overtake or cross in front of an aircraft departing from the adjacent parallel runway.*

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

***INTERPRETATION–***
*7110.65, 5–8–5, Departure and Arrivals on Parallel or Nonintersecting Diverging Runways (6–14–2017)*

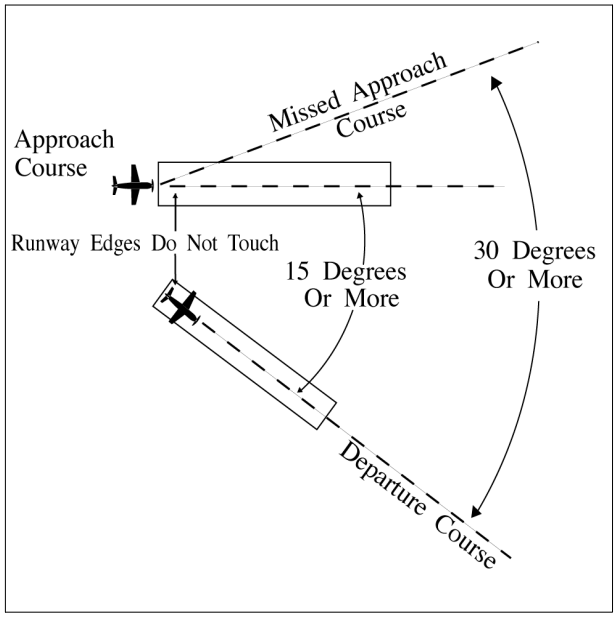
**2.** The arriving aircraft is approaching the farther runway: the runway centerlines separation exceeds 2,500 feet by at least 100 feet for each 500 feet the landing thresholds are staggered. (See FIG 5–8–14.)

***FIG 5–8–14***
**Parallel Thresholds are Staggered**




**c.** When nonintersecting runways diverge by 15 degrees or more and runway edges do not touch. (See FIG 5–8–15.)

***FIG 5–8–15***
**Diverging Nonintersecting Runways**




**d.** When the aircraft on takeoff is a helicopter or powered-lift, hold the departure until visual separation is possible or apply the separation criteria in subparagraphs a, b, or c.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–8–4, Departure and Arrival.*

**b.** The following conditions are required when applying the minimum radar separation on adjacent final approach courses allowed in subparagraph a:

***NOTE–***
**1.** *Established on RNP (EoR) operations are not authorized in conjunction with simultaneous dependent approaches.*

**2.** *Simultaneous dependent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches.*

**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–***
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*
*FAA Order JO 7210.3, Para 2–1–16, 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–***
*FAA Order 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 :

**(a)** during turn-on to parallel final approach, or

**(b)** until aircraft are established on a published segment of an approach authorized for Established on RNP (EoR) operations.

***NOTE–***
*Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway.*

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–10, Simultaneous Independent Approaches.*
*P/CG Term – Required Navigation Performance (RNP).*
*P/CG Term – Established on RNP Concept.*

**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.

**3.** Triple parallel approaches may be conducted when:

**(a)** Parallel runway centerlines are at least 3,900 feet apart; or

**(b)** Parallel runway centerlines are at least 3,000 feet apart, a 2.5° to 3.0° offset approach to both outside runways; 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.

**(d)** Parallel approaches to airports where the airport field elevation is more than 2,000 feet MSL require the use of the final monitor aid (FMA) system.

**4.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

***NOTE–***
*Except when conducting an EoR operation, no two aircraft will be assigned the same altitude during turn–on to final. 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.*

**HIGH UPDATE RATE SURVEILLANCE**

**b.** At locations with high update rate surveillance capable of update rates of 1.2 seconds or faster, and where fusion display mode is utilized, simultaneous independent approaches may be conducted under the following conditions:

**1.** Dual parallel runway centerlines are at least 3,100 feet apart, or dual parallel runway centerlines are at least 2,500 feet apart with a 2.5° to 3.0° offset approach to either runway.

**2.** Triple parallel runway centerlines are at least 3,100 feet apart, or triple parallel runway centerlines are at least 2,500 feet apart with a 2.5° to 3.0° offset approach to both outside runways, or triple parallel runway centerlines are at least 2,500 feet apart, and 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 3,100 feet.

***NOTE–***
*Aircraft without functioning ADS–B Out are restricted from utilizing these high update rate (HUR) procedures unless an alternative HUR surveillance source providing one–second or faster target report updating is utilized.*

**3.** A surveillance update rate of at least 1.2 seconds is required for monitoring the no transgression zone (NTZ) when conducting simultaneous independent approaches to the runway centerline spacing (RCLS) provided in this paragraph.

***NOTE–***
**1.** *HUR procedures cannot be conducted if notified that a 1.2-second update rate is not being provided.*

**2.** *Where RCLS is ≤3400 feet, the normal operating zone (NOZ) is constant at 700 feet; and for RCLS ≥3400 feet, the no transgression zone (NTZ) remains constant at 2000 feet.*

**4.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

**c.** 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 4.8 seconds or faster must be used to monitor approaches where:

**1.** Dual parallel runway centerlines are at least 2,500 and less than 4,300 feet apart.

**2.** Triple parallel runway centerlines are at least 2,500 but less than 5,000 feet apart.

**3.** Triple parallel approaches to airports where the airport field elevation is more than 2,000 feet MSL require use of the FMA system.

***NOTE–***
*At locations where the airfield elevation is 2000 feet or less, FMA is not required to monitor the NTZ for runway centerlines 4,300 feet or greater for dual runways, and 5,000 feet or greater for triple operations.*

**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–***
*FAA Order JO 7210.3, Para 10–4–10, Simultaneous Independent Approaches.*

**1.** Straight-in landings will be made.

**2.** All appropriate communication, navigation, and surveillance systems are operating normally.

**3.** Inform aircraft that simultaneous independent approaches are in use, or when runway centerlines are less than 4,300 feet, PRM approaches are in use, prior to aircraft departing an outer fix. This information may be provided through the ATIS.

***REFERENCE–***
*P/CG Term – Precision Runway Monitor (PRM) System.*

**4.** Clear the aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

***NOTE–***
*Not applicable to approaches with RF legs.*

**5.** An NTZ is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The primary responsibility for navigation on the final approach course rests with the pilot. Control instructions and information are issued only to ensure separation between aircraft and to prevent aircraft from penetrating the NTZ.

***NOTE–***
*Where RCLS is ≤3400 feet, the normal operating zone (NOZ) is constant at 700 feet; and for RCLS ≥3400 feet, the no transgression zone (NTZ) remains constant at 2000 feet.*

**6.** Monitor all approaches regardless of weather. Monitor local control frequency to receive any aircraft transmission. Issue control instructions as necessary to ensure aircraft do not enter the NTZ.

***NOTE–***
**1.** *Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the depicted NTZ. For PRM approaches, a transmit–only secondary "PRM frequency" is also used. Facility directives must define responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course.*

**2.** *The aircraft is considered the center of the primary radar return for that aircraft, or, if an FMA or other color final monitor aid is used, the center of the digitized target of that aircraft, for the purposes of ensuring an aircraft does not penetrate the NTZ. The provisions of paragraph 5–5–2, Target Separation, apply also.*

**7.** Communications transfer to the tower controller's frequency must be completed prior to losing 1,000 feet vertical or 3 miles radar separation between aircraft.

**e.** The following procedures must be used by the final monitor controllers:

**1.** For PRM approaches, provide position information to an aircraft that is left/right of the depicted final approach course centerline, and in your judgment is continuing on a track that may penetrate the NTZ.

***PHRASEOLOGY–***
*(Aircraft call sign) I SHOW YOU (left/right) OF THE FINAL APPROACH COURSE.*

**2.** Instruct the aircraft to return to the correct final approach course when aircraft are observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ.

***PHRASEOLOGY–***
*YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,*
*or*
*TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.*

**3.** Instruct aircraft on the adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed penetrating or in your judgment will penetrate the NTZ.

***NOTE–***
*For PRM approaches, an instruction that may include a descent to avoid the deviating aircraft should only be used when there is no other reasonable option available to the controller. In such a case, the descent must not put the aircraft below the MVA.*

***PHRASEOLOGY–***
*TRAFFIC ALERT, (call sign), TURN (right/left) IMMEDIATELY HEADING (degrees), CLIMB/DESCEND AND MAINTAIN (altitude).*

**4.** Terminate radar monitoring when one of the following occurs:

**(a)** Visual separation is applied.

**(b)** The aircraft reports the approach lights or runway in sight.

**(c)** The aircraft is 1 mile or less from the runway threshold, if procedurally required and contained in facility directives.

**5.** Do not inform the aircraft when radar monitoring is terminated.

**f.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous independent approaches, or PRM approaches, if applicable, are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, windshear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–9, Radar Service Termination.*
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–8. SIMULTANEOUS INDEPENDENT CLOSE PARALLEL APPROACHES –PRECISION RUNWAY MONITOR (PRM) APPROACHES

*TERMINAL*

When conducting PRM approaches, apply all pertinent provisions of paragraph 5–9–7 and the following:

**a.** PRM approaches may only be conducted when charted in the approach title, and where instrument approach charts specifically authorize simultaneous approaches.

***REFERENCE–***
*P/CG – Precision Runway Monitor (PRM) System.*
*P/CG – Simultaneous Close Parallel Approaches.*
*P/CG – PRM Approach.*

**b.** PRM approaches must be assigned when conducting instrument approaches to dual and triple parallel runways with runway centerlines separated by less than 4,300 feet.

## 5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)

***TERMINAL***

**a.** Simultaneous offset instrument approaches (SOIA) may be conducted at FAA designated airports that have an authorization issued by the Director, Strategic Operations, AJT–1, in coordination with AFS with parallel runways that have centerlines separated by at least 750 feet and less than 3,000 feet with one final approach course offset by 2.5 to 3.0 degrees; and

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn–on to final approaches.

***NOTE–***
*Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.*

**3.** For runways less than 2,500 feet apart, whenever the ceiling is less than 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses, as described in paragraph 5−5−4, Minima, must be applied unless acceptable mitigating techniques and operational procedures have been documented and verified by an AFS safety assessment and authorized by the Director, Strategic Operations, AJT−1. The wake turbulence mitigation techniques employed will be based on each airport's specific runway geometry and meteorological conditions and implemented through local facility directives.

**4.** Issue all applicable wake turbulence advisories.

***REFERENCE−***
*FAA Order JO 8260.49, Para 13.0, Wake Turbulence Requirements.*
*FAA Order JO 7210.3, Para 10−4−10, Simultaneous Independent Approaches.*
*FAA Order JO 7110.65, Para 2−1−20, Wake Turbulence Cautionary Advisories.*
*FAA Order JO 7110.65, Para 5−5−4, Minima.*

**h.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when conducting SOIA to parallel runways. Factors include but are not limited to wind direction/velocity, wind−shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of the approach in use.

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−1−9, Radar Service Termination.*
*FAA Order JO 7110.65, Para 5−9−2, Final Approach Course Interception.*

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

*TERMINAL*

**a.** Simultaneous independent approaches to widely-spaced parallel runways may only be conducted where instrument approach charts specifically authorize simultaneous approaches.

**b.** Apply the following minimum separation when conducting simultaneous independent approaches to runway centerlines that are separated by more than 9,000 feet with a field elevation at or below 5,000 feet MSL, or 9,200 feet between runway centerlines with a field elevation above 5,000 feet MSL:

**1.** Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft:

**(a)** during turn-on to parallel final approach, or

**(b)** conducting EoR operations, until aircraft are established on a published segment of an approach authorized for EoR operations.

***NOTE−***
*Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway.*

***REFERENCE−***
*FAA Order JO 7210.3, Para 10−4−11, Simultaneous Widely-Spaced Parallel Operations.*
*P/CG Term – Required Navigation Performance (RNP).*
*P/CG Term – Established on RNP Concept.*

**2.** Provide the minimum applicable radar separation between aircraft on the same final approach course.

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−5−4, Minima.*

**c.** The following conditions are required when applying the minimum separation on widely−spaced parallel courses allowed in subparagraph b:

**1.** Straight-in landings will be made.

**2.** The approach system, radar, and appropriate frequencies are operating normally.

**3.** Inform aircraft that simultaneous approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

**4.** Clear an aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

***NOTE–***
*Not applicable to approaches with RF legs.*

**5.** Separate final and local controllers are required for each final. Aircraft on the final must be on the appropriate final controller frequency for that runway.

**6.** Transfer of communication to the tower controller's frequency must be specified in a facility directive and/or Letter of Agreement.

**d.** The following procedures must be used by the final approach controllers:

***NOTE–***
*There is no requirement for establishment of a NTZ.*

**1.** Instruct the aircraft to return to the correct final approach course when that aircraft is observed to overshoot the turn-on or continue on a track which deviates from the final approach course in the direction of the adjacent approach course.

***PHRASEOLOGY–***
*YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,*
*or*
*TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.*

**2.** Instruct aircraft on adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed, or in the controller's judgment, has deviated from the final approach course in the direction of the adjacent approach course.

***PHRASEOLOGY–***
*TRAFFIC ALERT, (call sign), TURN (left/right) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude)*

**e.** Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous approaches are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, wind-shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–2, Final Approach Course Interception.*

## 5–9–11. TRANSITIONAL PROCEDURE

When aircraft are conducting simultaneous dependent, independent, or any approaches allowing for reduced separation, and one of the aircraft executes a go-around or has its approach clearance terminated and prior to losing the approved reduced separation, control instructions must be expeditiously issued to increase separation between the applicable aircraft. These control instructions must establish approved separation (for example, altitude and/or lateral separation via divergence). In addition, wake turbulence cautionary advisories must be issued in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.

# Section 11. Surveillance Approaches– Terminal

## 5–11–1. ALTITUDE INFORMATION

Provide recommended altitudes on final approach if the pilot requests. If recommended altitudes are requested, inform the pilot that recommended altitudes which are at or above the published MDA will be given for each mile on final.

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–5–7, Recommended Altitudes for Surveillance Approaches.*
*FAA Order JO 7110.65, Para 5–11–5, Final Approach Guidance.*

***PHRASEOLOGY–***
*RECOMMENDED ALTITUDES WILL BE PROVIDED FOR EACH MILE ON FINAL TO MINIMUM DESCENT ALTITUDE/CIRCLING MINIMUM DESCENT ALTITUDE.*

## 5–11–2. VISUAL REFERENCE REPORT

Aircraft may be requested to report the runway, approach/runway lights, or airport in sight. Helicopters and powered-lift aircraft making a "point-in-space" approach may be requested to report when able to proceed to the landing area by visual reference to a prescribed surface route.

***PHRASEOLOGY–***
*REPORT (runway, approach/runway lights, or airport) IN SIGHT.*

*REPORT WHEN ABLE TO PROCEED VISUALLY TO AIRPORT/HELIPORT/VERTIPORT.*

## 5–11–3. DESCENT NOTIFICATION

**a.** Issue advance notice of where descent will begin and issue the straight-in MDA prior to issuing final descent for the approaches.

***NOTE–***
*The point at which descent to the minimum descent altitude is authorized is the final approach fix unless an altitude limiting stepdown-fix is prescribed.*

**b.** When it is determined that the surveillance approach will terminate in a circle to land maneuver, request the aircraft approach category from the pilot. After receiving the aircraft approach category, provide him/her with the applicable circling MDA prior to issuing final descent for the approach.

***NOTE–***
*Pilots are normally expected to furnish the aircraft approach category to the controller when it is determined that the surveillance approach will terminate in a circle to land maneuver. If this information is not voluntarily given, solicit the aircraft approach category from the pilot, and then issue him/her the applicable circling MDA.*

***PHRASEOLOGY–***
*PREPARE TO DESCEND IN (number) MILE(S).*

*for straight-in approaches,*

*MINIMUM DESCENT ALTITUDE* (altitude).

*for circling approaches,*

*REQUEST YOUR AIRCRAFT APPROACH CATEGORY. (Upon receipt of aircraft approach category), PUBLISHED CIRCLING MINIMUM DESCENT ALTITUDE (altitude).*

## 5–11–4. DESCENT INSTRUCTIONS

When an aircraft reaches the descent point, issue one of the following as appropriate:

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–12–10, Elevation Failure.*

**a.** Unless a descent restriction exists, advise the aircraft to descend to the MDA.

***PHRASEOLOGY–***
*(Number) MILES FROM RUNWAY/AIRPORT/HELIPORT. DESCEND TO YOUR MINIMUM DESCENT ALTITUDE.*

**b.** When a descent restriction exists, specify the prescribed restriction altitude. When the aircraft has passed the altitude limiting point, advise to continue descent to MDA.

***PHRASEOLOGY–***
*(Number) MILES FROM RUNWAY/AIRPORT/HELIPORT. DESCEND AND MAINTAIN (restriction altitude).*

*DESCEND TO YOUR MINIMUM DESCENT ALTITUDE.*

## 5–11–5. FINAL APPROACH GUIDANCE

**a.** Issue course guidance, inform the aircraft when it is on course, and frequently inform the aircraft of any deviation from course. Transmissions with aircraft on surveillance final approach should occur approximately every 15 seconds.

***PHRASEOLOGY–***
*HEADING (heading),*

*ON COURSE,*

*or*

*SLIGHTLY/WELL LEFT/RIGHT OF COURSE.*

***NOTE–***
*Controllers should not key the radio transmitter continuously during radar approaches to preclude a lengthy communications block. The decision on how often transmitters are unkeyed is the controller's prerogative.*

**b.** Issue trend information, as required, to indicate target position with respect to the extended runway centerline and to describe the target movement as appropriate corrections are issued. Trend information may be modified by the terms "RAPIDLY" and "SLOWLY" as appropriate.

***EXAMPLE–***
*"Going left/right of course."*
*"Left/right of course and holding/correcting."*

**c.** Inform the aircraft of its distance from the runway, airport/heliport, or MAP, as appropriate, each mile on final.

***PHRASEOLOGY–***
*(Number) MILE(S) FROM RUNWAY/AIRPORT/HELIPORT OR MISSED APPROACH POINT.*

**d.** Recommended altitudes must be furnished, if requested, in accordance with paragraph 5–11–1, Altitude Information.

***PHRASEOLOGY–***
*If requested,*

*ALTITUDE SHOULD BE (altitude).*

## 5–11–6. APPROACH GUIDANCE TERMINATION

**a.** Discontinue surveillance approach guidance when:

**1.** Requested by the pilot.

**2.** In your opinion, continuation of a safe approach to the MAP is questionable.

**b.** A low altitude alert may be suppressed from the control position. Computer entry of the suppress message constitutes an acknowledgment for the alert and indicates that appropriate action has or will be taken.

## 5–14–8. TRACK SUSPEND FUNCTION

Use the track suspend function only when data block overlap in holding patterns or in proximity of the final approach create an unworkable situation. If necessary to suspend tracks, those which are not displaying automatic altitude readouts must be suspended. If the condition still exists, those displaying automatic altitude readouts may then be suspended.

## 5–14–9. APPROACH RUNWAY VERIFICATION (ARV)

**a.** When an ARV alert is received, evaluate the reason for the alert and take appropriate action as needed.

**b.** If another controller is involved in the alert initiate coordination as needed or as specified in a facility directive.

**c.** Acknowledgment of an ARV alert signifies that appropriate action has or will be taken.

**d.** ARV alerts may not be suppressed for another control position without being coordinated or as specified in a facility directive.

# Chapter 6. Nonradar

## Section 1. General

### 6–1–1. DISTANCE

Use mileage-based (DME and/or ATD) procedures and minima only when direct pilot/controller VHF or UHF voice communications are maintained.

### 6–1–2. NONRECEIPT OF POSITION REPORT

When a position report affecting separation is not received, take action to obtain the report no later than 5 minutes after the aircraft was estimated over the fix.

***REFERENCE–***
*FAA Order JO 7110.65, Para 9–2–6, IFR Military Training Routes.*

### 6–1–3. DUPLICATE POSITION REPORTS

Do not require an aircraft to make the same position report to more than one facility.

### 6–1–4. ADJACENT AIRPORT OPERATION

*TERMINAL*

**WAKE TURBULENCE APPLICATION**

**a.** The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following:

**1.** Category B, C, D, E, F, G, H, or I aircraft behind Category A aircraft – *3 minutes*.

**2.** Category B, C, D, E, F, G, H, or I aircraft behind Category B or D aircraft – *2 minutes*.

**3.** Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes*.

**4.** Category I aircraft behind Category E aircraft – *2 minutes*.

**b.** *EN ROUTE*. The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following:

**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 6–1–1***
**Adjacent Airport Operation –– Arrival**

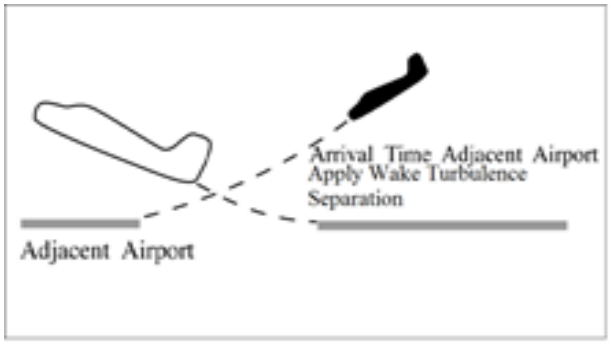
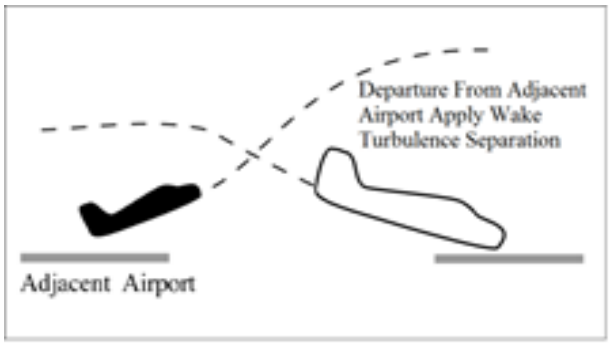


*FIG 6–1–2*
**Adjacent Airport Operation –– Departure**




## 6–1–5. ARRIVAL MINIMA

*TERMINAL*

**WAKE TURBULENCE APPLICATION**

**a.** Separate IFR aircraft landing behind other arriving aircraft to the same runway, a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross:

**1.** Category B, C, D, E, F, or G aircraft behind Category A aircraft – 3 *minutes*.

**2.** Category H or I aircraft behind Category A aircraft – 4 *minutes*.

**3.** Category B, C, D, E, F, or G aircraft behind Category B or D aircraft – 2 *minutes*.

**4.** Category E, F, or G aircraft behind Category C aircraft – 2 *minutes*.

**5.** Category H or I aircraft behind Category B, C, or D aircraft – 3 *minutes*.

**6.** Category I aircraft behind Category E aircraft – 3 *minutes*.

**b.** *EN ROUTE.* Separate IFR aircraft landing behind an arriving aircraft to the same runway:

**1.** Behind super:

**(a)** Heavy or large – *3 minutes*.

**(b)** Small – *4 minutes*.

**2.** Behind heavy:

**(a)** Heavy or large – *2 minutes*.

**(b)** Small – *3 minutes*.

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

**c.** *EN ROUTE.* Separate IFR aircraft landing behind an arriving aircraft to a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross:

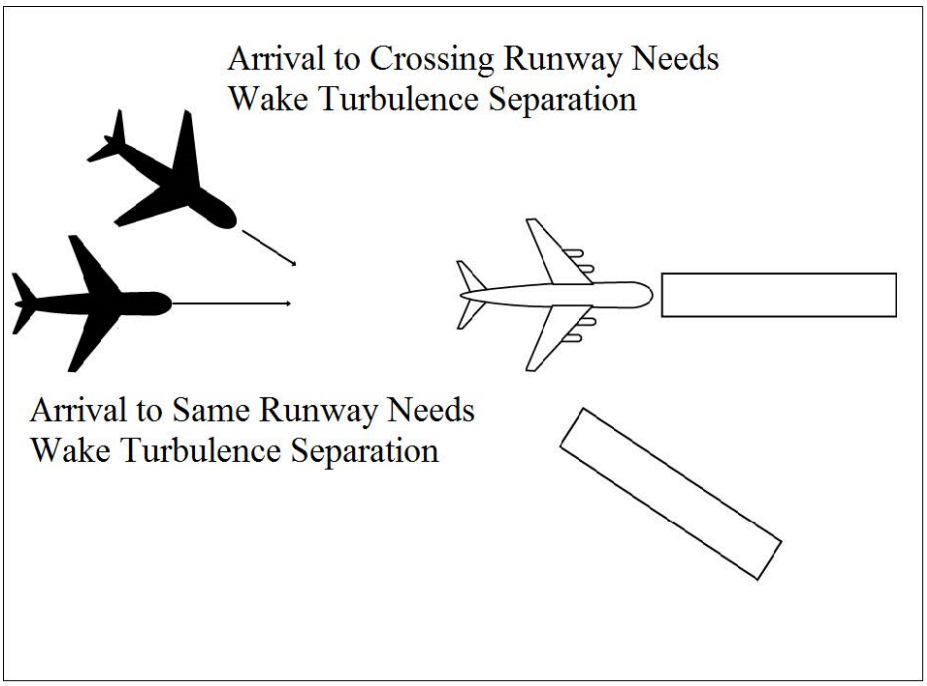
**1.** Heavy, large, or small behind super – *3 minutes*.

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

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

*FIG 6–1–3*

**Arrival Minima Landing Behind an Arriving Aircraft Requiring Wake Turbulence Separation**



# Section 2. Initial Separation of Successive Departing Aircraft

## 6–2–1. MINIMA ON DIVERGING COURSES

Separate aircraft that will fly courses diverging by 45 degrees or more after departing the same or adjacent airports by use of one of the following minima:

***NOTE–***

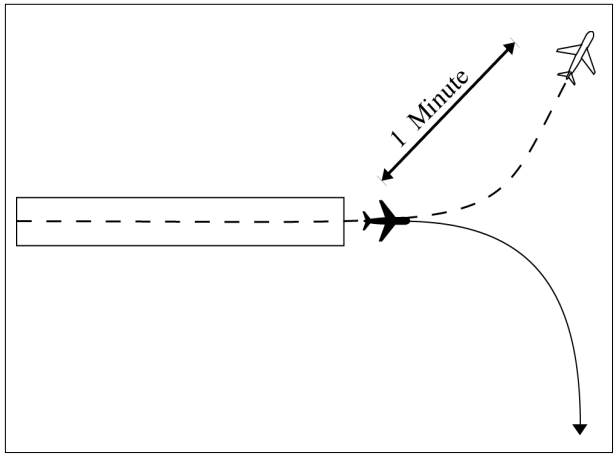
**1.** *Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.*

**2.** *When one or both of the departure surfaces is a helipad or vertipad, use the takeoff course as a reference, comparable to the centerline of a runway, and the helipad/vertipad center as the threshold.*

**a.** When aircraft will fly diverging courses:

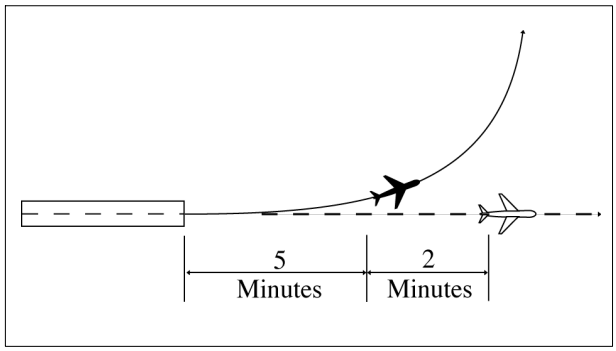
**1.** Immediately after takeoff – *1 minute* until courses diverge. (See FIG 6–2–1.)

***FIG 6–2–1***
**Minima on Diverging Courses**



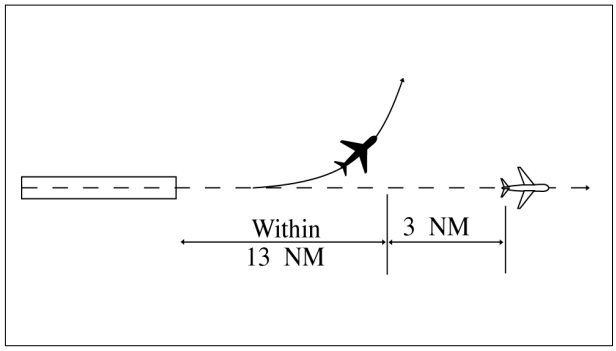

**2.** Within 5 minutes after takeoff– *2 minutes* until courses diverge. (See FIG 6–2–2.)

***FIG 6–2–2***
**Minima on Diverging Courses**



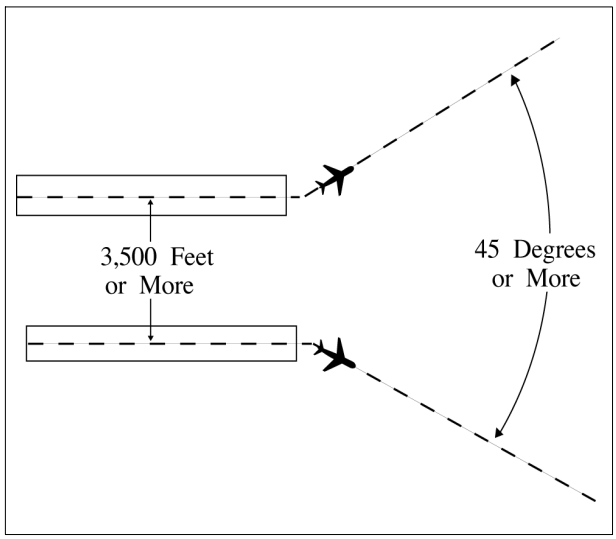

**3.** Within 13 miles DME/ATD after takeoff – *3 miles* until courses diverge. (See FIG 6–2–3.)

*FIG 6–2–3*
**Minima on Diverging Courses**




**b.** *TERMINAL*. Between aircraft departing in the same direction from different runways whose centerlines are parallel and separated by at least 3,500 feet, authorize simultaneous takeoffs when the aircraft will fly diverging courses immediately after takeoff. (See FIG 6–2–4.)

*FIG 6–2–4*
**Minima on Diverging Courses**




**c.** *TERMINAL*. Between aircraft that will fly diverging courses immediately after takeoff from diverging runways: (See FIG 6–2–5.)

**1.** Nonintersecting runways. Authorize simultaneous takeoffs when either of the following conditions exist:

**(a)** The runways diverge by 30 degrees or more.

**(b)** The distance between runway centerlines at and beyond the points where takeoffs begin is at least:

**(1)** 2,000 feet and the runways diverge by 15 to 29 degrees inclusive.

**(2)** 3,500 feet and the runways diverge by less than 15 degrees.

*departed the holding/approach fix inbound at the designated time, maintaining 2,000 until cleared for approach at point A. The #1 aircraft has been sighted, enabling the controller to issue approach clearance to the #2 aircraft at point A.*

**c.** Release the aircraft to the tower before it reaches the final approach fix.

## 6–7–3. SEQUENCE INTERRUPTION

Interrupt the established timed approach sequence if necessary to allow an aircraft to execute a different type of approach.

## 6–7–4. LEVEL FLIGHT RESTRICTION

If the weather report indicates an aircraft will be in IFR conditions over the final approach fix (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker (precision approach) when paragraph 6–7–2, Approach Sequence, subparagraph b is applied, clear the second aircraft for an approach early enough to allow at least 1 minute of level flight before crossing the final approach fix/outer marker or the fix used in lieu of the outer marker.

## 6–7–5. INTERVAL MINIMA

**a.** Except as provided in subparagraph b, use a *2-minute* or a *5-mile* radar interval as the minimum between successive approaches**.**

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*
*FAA Order JO 7110.65, Para 6–7–1, Application.*
*FAA Order JO 7110.65, Para 6–7–2, Approach Sequence.*

**WAKE TURBULENCE APPLICATION**

**b.** *EN ROUTE.* Use the following time or radar interval as the minimum interval:

**1.** Behind super:

**(a)** Heavy – *3 minutes* or *6 miles.*

**(b)** Large – *3 minutes* or *7 miles.*

**(c)** Small – *4 minutes* or *8 miles.*

**2.** Small behind heavy – *3 minutes* or *6 miles.*

**c.** *TERMINAL*. Use the following times or radar intervals as the minimum:

**1.** Behind Category A aircraft:

**(a)** Category B, C, or D aircraft – 3 minutes or 6 miles.

**(b)** Category E, F, or G aircraft – 3 minutes or 7 miles.

**(c)** Category H or I aircraft – 4 minutes or 8 miles.

**2.** Category H or I aircraft behind Category B, C, or D aircraft – 3 *minutes* or 6 *miles*.

**d.** Increase the interval as necessary, considering the following:

**1.** Relative speeds of the aircraft concerned.

**2.** Existing weather conditions.

**3.** Distance between the approach fix and the airport.

**4.** Type of approach being made.

## 6–7–6. TIME CHECK

Issue a time check to an aircraft before specifying a time to leave the approach fix inbound unless the aircraft is vectored to the final approach course.

## 6–7–7. MISSED APPROACHES

**a.** If weather conditions are such that an aircraft will likely miss an approach, issue an alternative missed approach procedure to the next aircraft.

**b.** If an aircraft misses an approach, allow the next aircraft to continue the approach if it has been assigned an alternative missed approach procedure. Retain radar control or hold any remaining aircraft at assigned altitudes until traffic conditions permit the issuance of approach clearances.

**c.** When paragraph 6–7–2, Approach Sequence, subparagraph b is applied and the first aircraft misses an approach, retain radar control or clear the second aircraft to maintain the last assigned altitude (minimum holding altitude) and return to the holding/approach fix to hold until traffic conditions permit the issuance of approach clearances.

***PHRASEOLOGY–***
*(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information). If required, (ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT? If the pilot reports traffic in sight, or the answer is in the affirmative, (ACID), MAINTAIN VISUAL SEPARATION*

**(d)** If the pilot reports the traffic in sight and will maintain visual separation (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

***PHRASEOLOGY–***
*(ACID), APPROVED.*

***NOTE–***
*Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.*

**(e)** If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

**(f)** Advise the pilots if the radar targets appear likely to merge.

***NOTE–***
*Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.*

***EXAMPLE–***
*"Radar targets appear likely to merge."*

***PHRASEOLOGY–***
*(ACID) TRAFFIC, (clock position and distance), (direction)–BOUND, (type of aircraft), ON CONVERGING COURSE, HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–4–1, Visual Approach.*
*FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.*

**(g)** Advise the pilots if either aircraft is a heavy.

**(h)** Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20.

***INTERPRETATION–***
*7110.65, 7–2–1b, Visual Separation (5–24–2017)*
*7110.65, 7–2–1c, Visual Separation (7–17–2015)*

**c.** Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas when approved separation is provided before and after the application of visual separation. The nonapproach control tower must apply the procedures contained in subparagraph a1 or a2, when applying visual separation.

***PHRASEOLOGY–***
*VISUAL SEPARATION APPROVED BETWEEN (ACID) AND (ACID),*

*and for departing aircraft,*

*(departing/succeeding aircraft) (ACID), RELEASED.*

**d.** If the nonapproach control tower controller states to the radar controller that they will provide visual separation between arrivals, departures/arrivals and/or successive departures, and states the call signs of all aircraft involved, the radar controller can approve the application of visual separation as requested.

***PHRASEOLOGY–***
*VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED*

***NOTE–***
*A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation of IFR aircraft before and after application of visual separation is an IFR control function that must*

*be applied by the Approach/Departure/En Route facility. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation services are required.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–11, Practice Instrument Approaches.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*FAA Order JO 7110.65, Para 7–4–2, Vectors for Visual Approach.*
*FAA Order JO 7110.65, Para 7–6–1, Application.*
*FAA Order JO 7110.65, Para 7–7–1, Application.*
*FAA Order JO 7110.65, Para 7–7–2, Issuance of EFC.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65, Para 7–7–4, Helicopter/Powered-Lift Traffic.*
*FAA Order JO 7110.65, Para 7–7–5, Altitude Assignments.*
*FAA Order JO 7110.65, Para 7–7–6, Approach Interval.*
*FAA Order JO 7110.65, Para 7–7–7, TRSA Departure Information.*
*FAA Order JO 7110.65, Para 7–8–2, Class C Services.*
*FAA Order JO 7110.65, Para 7–8–3, Separation.*
*FAA Order JO 7110.65, Para 7–8–4, Establishing Two–Way Communications.*
*FAA Order JO 7110.65, Para 7–8–5, Altitude Assignments.*
*FAA Order JO 7110.65, Para 7–8–6, Exceptions.*
*FAA Order JO 7110.65, Para 7–9–1, Application.*
*FAA Order JO 7110.65, Para 7–9–3, Methods.*
*FAA Order JO 7110.65, Para 7–9–4, Separation.*
*FAA Order JO 7110.65, Para 7–9–6, Helicopter/Powered-Lift Traffic.*
*FAA Order JO 7110.65, Para 7–9–7, Altitude Assignments.*

*or*

*VERIFY THAT YOU HAVE THE (airport) WEATHER.*

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

**d.** Inform the trailing aircraft of the lead aircraft's manufacturer and/or model when wake turbulence separation is required.

***EXAMPLE–***
*"Cessna Three Four Juliet, following a heavy Boeing 747, 12 o'clock, seven miles."*

*or*

*"Cessna Three Four Juliet, following a Seven-Fifty-Seven, 12 o'clock, four miles."*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–4–21, Description of Aircraft Types.*
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.*

***NOTE–***
*Visual separation is not authorized when the lead aircraft is a super.*

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

**e.** Inform the tower of the aircraft's position prior to communications transfer at controlled airports. STARS functions may be used provided a facility directive or LOA specifies control and communication transfer points.

**f.** In addition to the requirements of paragraph 7–4–2, Vectors for Visual Approach, and subparagraphs 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–***
*FAA Order 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/fusion target symbols to touch unless visual separation is being applied.

**2.** When the aircraft flight paths intersect, ensure approved separation is maintained until visual separation is applied.

**c.** 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, 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 extended runway centerline and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. Do not permit an aircraft to overtake another aircraft when wake turbulence separation is required.

**2.** Parallel runways separated by 2,500 feet but less than 4,300 feet.

**(a)** When aircraft are approaching from opposite base legs, or one aircraft is turning to final and another aircraft is established on the extended centerline for the adjacent runway, 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,

***INTERPRETATION–***
*7110.65 7–4–4, Approaches to Multiple Runways (8–14–2015)*

**(2)** One pilot has acknowledged receipt of a visual approach clearance and the other pilot has acknowledged receipt of a visual or instrument approach clearance.

**(b)** When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the nearer runway, approved separation is maintained or pilot–applied visual separation is provided by the succeeding aircraft until intercepting the farther adjacent extended runway centerline.

**(c)** Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a), (b), or (d) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent extended runway centerline.

**(d)** When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the farther runway, the succeeding aircraft must be assigned a heading that will intercept the extended centerline of the nearer runway at an angle not greater than 30 degrees. Approved separation must be maintained or pilot–applied visual separation must be provided by the succeeding aircraft until it is established on the extended centerline of the nearer runway.

***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.** *The 30-degree intercept angle is not necessary when approved separation is maintained until the aircraft are established on the extended centerline of the assigned runway.*

**3.** *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.*

**4.** *Procedures using Radius-to-Fix legs that intercept final may be used in lieu of the 30-degree intercept provisions contained in this paragraph.*

**3.** Parallel runways separated by 4,300 feet or more.

**(a)** When aircraft are approaching from opposite base legs, or one aircraft is turning to final and another aircraft is established on the extended centerline for the adjacent runway, approved separation is provided until the aircraft are:

**(1)** Assigned 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)** One of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

**(b)** When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the nearer runway, approved separation is maintained or pilot–applied visual separation is provided by the succeeding aircraft until intercepting the farther adjacent extended runway centerline.

**(c)** Provided that aircraft flight paths do not intersect, when the provisions of subparagraphs (a), (b), or (d) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent extended runway centerline.

**(d)** When aircraft are approaching from the same side of the airport and the lead aircraft is assigned the farther runway, the succeeding aircraft must be assigned a heading that will intercept the extended centerline of the nearer runway at an angle not greater than 30 degrees. Approved separation must be maintained or pilot−applied visual separation must be provided by the succeeding aircraft until it is established on the extended centerline of the nearer runway.

***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.** *The 30-degree intercept angle is not necessary when approved separation is maintained until the aircraft are established on the extended centerline of the assigned runway.*

**3.** *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.*

**4.** *Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.*

**(e)** Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subparagraph (a), (b), or (d) are met.

**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 paragraph 3−10−4, Intersecting Runway/Intersecting Flight Path Separation.*

***REFERENCE−***

*FAA Order JO 7110.65, Para 7−7−3, Separation.*
*FAA Order JO 7110.65, Para 7−8−3, Separation.*
*FAA Order JO 7110.65, Para 7−9−4, 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 paragraph 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. RNAV VISUAL FLIGHT PROCEDURES (RVFP)

RNAV Visual Flight Procedures (RVFPs) are special procedures flown in VMC and clear of clouds and used by authorized operators only. Clear an aircraft for an RVFP when:

**a.** Requested by the pilot, or if necessary, as addressed in a Letter of Agreement (LOA).

**b.** The pilot reports the airport in sight or, at locations with an operating control tower, the preceding aircraft in sight.

**c.** An altitude is assigned at or above the MVA/MIA, before issuing an approach clearance when conducting an RVFP. The pilot should join the RVFP at the beginning of the charted procedure, or if necessary, may join at another waypoint along the path of the charted procedure, except for waypoints beginning or within an RF leg.

**d.** The official weather at the airport of intended landing indicates VFR and should meet or exceed the ceiling and visibility specified on the RVFP.

**e.** The published name of the RVFP and the landing runway are specified in the approach clearance.

***PHRASEOLOGY–***
*(Ident) CLEARED RNAV VISUAL RUNWAY (number) APPROACH*

***NOTE–***
*Refer to the facility RVFP LOAs, if applicable, to determine the authorized operators.*

***REFERENCE–***
*FAA Order 8260.60, Special Procedures.*

## 7–4–7. 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.

***REFERENCE–***
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*
*14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*

**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 5. Special VFR (SVFR)

## 7–5–1. AUTHORIZATION

**a.** SVFR operations in weather conditions less than basic VFR minima are authorized:

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7400.11, Airspace Designations and Reporting Points.*
*14 CFR Section 91.157, Special SVFR Weather Minimums.*
*14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*

**1.** At any location not prohibited by 14 CFR part 91, Appendix D or when an exemption to 14 CFR part 91 has been granted and an associated LOA established. 14 CFR part 91 does not prohibit SVFR helicopter operations.

**2.** Powered-lift aircraft, for the purposes of SVFR operations contained in this section, must be handled as helicopters.

**3.** Only within the lateral boundaries of Class B, Class C, Class D, or Class E surface areas, below 10,000 feet MSL. SVFR is not authorized within Class E extension areas.

**4.** Only when requested by the pilot.

**5.** On the basis of weather conditions reported at the airport for which the surface area is designated.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–5–6, Climb to VFR.*
*FAA Order JO 7110.65, Para 7–5–7, Ground Visibility Below One Mile.*

**6.** When weather conditions are not reported at the airport of intended landing/departure and the pilot advises that VFR cannot be maintained and requests SVFR.

***PHRASEOLOGY–***
*CLEARED TO ENTER/OUT OF/THROUGH, (name) SURFACE AREA*

*and if required,*

*(direction) OF (name) AIRPORT (specified routing),*
*and*

*MAINTAIN SPECIAL V–F–R CONDITIONS,*

*and if required,*

*AT OR BELOW (altitude below 10,000 feet MSL)*

*or as applicable under an exemption from 14 CFR part 91,*

*CLEARED FOR (coded arrival or departure procedure) ARRIVAL/DEPARTURE, (additional instructions as required).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*

**b.** Do not authorize VFR operations beneath a broken or overcast ceiling within a surface area when the reported ceiling at the primary airport is less than 1,000 feet. A Special VFR clearance is required.

***REFERENCE–***
*14 CFR Section 91.155(c), Basic VFR Weather Minimums.*

***NOTE–***
*VFR operations are authorized within a surface area when operating above a ceiling that is reported as less than 1,000 feet AGL in accordance with 14 CFR section 91.155(a).*

**c.** SVFR operations may be authorized for aircraft operating in or transiting a Class B, Class C, Class D, or Class E surface area when the primary airport is reporting VFR but the pilot advises that basic VFR cannot be maintained.

***NOTE–***
*The basic requirements for issuance of a SVFR clearance in subparagraph a apply with the obvious exception that weather conditions at the controlling airport are not required to be less than basic VFR minima.*

## 7–5–2. PRIORITY

**a.** SVFR flights may be approved only if arriving and departing IFR aircraft are not delayed.

***EXAMPLE–***
**1.** *A SVFR aircraft has been cleared to enter a Class B, Class C, Class D, or Class E surface area and subsequently an IFR aircraft is ready to depart or is in position to begin an approach. Less overall delay might accrue to the IFR aircraft if the SVFR aircraft is allowed to proceed to the airport and land, rather than leave, a Class B, Class C, Class D, or Class E surface area or be repositioned to provide IFR priority.*

**2.** *A SVFR aircraft is number one for takeoff and located in such a position that the number two aircraft, an IFR flight, cannot taxi past to gain access to the runway. Less overall delay might accrue to the IFR aircraft by releasing the SVFR departure rather than by having the aircraft taxi down the runway to a turnoff point so the IFR aircraft could be released first.*

***NOTE–***
*The priority afforded IFR aircraft over SVFR aircraft is not intended to be so rigidly applied that inefficient use of airspace results. The controller has the prerogative of permitting completion of a SVFR operation already in progress when an IFR aircraft becomes a factor if better overall efficiency will result.*

**b.** Inform an aircraft of the anticipated delay when a SVFR clearance cannot be granted because of IFR traffic. Do not issue an EFC or expected departure time.

***PHRASEOLOGY–***
*EXPECT (number) MINUTES DELAY, (additional instructions as necessary).*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*

## 7–5–3. SEPARATION

**a.** Apply nonradar or visual separation between:

**1.** SVFR fixed–wing aircraft.

**2.** SVFR fixed–wing aircraft and SVFR Helicopters.

**3.** SVFR fixed–wing aircraft and IFR aircraft.

***NOTE–***
**1.** *Vertical separation is authorized between SVFR fixed-wing aircraft and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments*

**2.** *Due to the requirements for SVFR fixed-wing aircraft to maintain 1-mile flight visibility and to remain clear of clouds, radar separation is not authorized during SVFR fixed-wing operations. Radar vectors are authorized, as prescribed in paragraph 5–6–1, Application, subparagraph f, to expedite the entrance, exit, and transition of SVFR fixed-wing aircraft through the appropriate surface area.*

***REFERENCE–***
*FAA Order JO 7110.65, Chapter 6, Nonradar.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.*

**b.** Apply nonradar, visual, or IFR radar separation between:

**1.** SVFR Helicopters.

**2.** SVFR Helicopters and IFR aircraft.

***NOTE–***
**1.** *Vertical separation is authorized between SVFR helicopters and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments.*

**2.** *Radar separation as prescribed in Chapter 5 may be applied provided that the facility conducting the operation is authorized to provide radar separation services in accordance with FAA Order JO 7210.3, paragraph 10-5-3, Functional Use of Certified Tower Radar Displays (CTRD), subparagraph b5, and subparagraph d. Facilities that are not delegated airspace or separation responsibility must use CTRDs in accordance with FAA Order JO 7110.65, paragraph 3–1–9, Use of Tower Radar Displays, subparagraph b.*

**c.** Alternate SVFR helicopter separation minima may be established when warranted by the volume and/or complexity of local helicopter operations. Alternate SVFR helicopter separation minima must be established with an LOA with the helicopter operator which must specify, as a minimum, that SVFR helicopters are to maintain visual reference to the surface and adhere to the following aircraft separation minima:

**1.** Between a SVFR helicopter and an arriving or departing IFR aircraft:

**(a)** $^1/_2$ mile. If the IFR aircraft is less than 1 mile from the landing airport.

**(b)** 1 mile. If the IFR aircraft is 1 mile or more from the airport.

**2.** 1 mile between SVFR helicopters. This separation may be reduced to 200 feet if:

**(a)** Both helicopters are departing simultaneously on courses that diverge by at least 30 degrees and:

**(1)** The tower can determine this separation by reference to surface markings; or

**(2)** One of the departing helicopters is instructed to remain at least 200 feet from the other.

***NOTE–***
**1.** *Vertical separation is authorized between SVFR helicopters and IFR aircraft as prescribed in FAA Order JO 7110.65, paragraph 7–5–4, Altitude Assignments.*

**2.** *Radar separation as prescribed in Chapter 5 may be applied provided that the facility conducting the operation is authorized to provide radar separation services in accordance with FAA Order JO 7210.3, paragraph 10-5-3, Functional Use of Certified Tower Radar Displays (CTRD), subparagraph b5, and subparagraph d. Facilities that are not delegated airspace or separation responsibility must use CTRDs in accordance with FAA Order JO 7110.65, paragraph 3–1–9, Use of Tower Radar Displays, subparagraph b.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*FAA Order JO 7110.65, Para 7–5–4, Altitude Assignment.*
*FAA Order JO 7110.65, Chapter 6, Nonradar.*
*FAA Order JO 7210.3, Para 10-5-3, Functional Use of Certified Tower Radar Displays.*

## 7–5–4. ALTITUDE ASSIGNMENT

Do not assign a fixed altitude when applying vertical separation, but clear the SVFR aircraft at or below an altitude which is at least 500 feet below any conflicting IFR traffic but not below the MSA prescribed in 14 CFR section 91.119.

***PHRASEOLOGY–***
*MAINTAIN SPECIAL V–F–R CONDITIONS AT OR BELOW (altitude).*

***NOTE–***
*SVFR aircraft are not assigned fixed altitudes to maintain because of the clearance from clouds requirement.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*

## 7–5–5. LOCAL OPERATIONS

**a.** Authorize local SVFR operations for a specified period (series of landings and takeoffs, etc.) upon request if the aircraft can be recalled when traffic or weather conditions require. Where warranted, LOAs may be consummated.

***PHRASEOLOGY–***
*LOCAL SPECIAL V–F–R OPERATIONS IN THE IMMEDIATE VICINITY OF (name) AIRPORT ARE AUTHORIZED UNTIL (time). MAINTAIN SPECIAL V–F–R CONDITIONS.*

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–3–2, Appropriate Subjects.*

**b.** Control facilities may also authorize an FSS to transmit SVFR clearances so that only one aircraft at a time operates in the Class B, Class C, Class D, or Class E surface areas unless pilots agree that they will maintain visual separation with other aircraft operating in the Class B, Class C, Class D, or Class E surface areas. Such authorization concerning visual separation by pilots must be contained in a LOA between the control facility and the FSS.

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–3–3, Developing LOA.*
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

## 7–5–6. CLIMB TO VFR

Authorize an aircraft to climb to VFR upon request if the only weather limitation is restricted visibility.

***PHRASEOLOGY–***
*CLIMB TO V–F–R WITHIN (name) SURFACE AREA/WITHIN (a specified distance) MILES FROM (airport name) AIRPORT, MAINTAIN SPECIAL V–F–R CONDITIONS UNTIL REACHING V–F–R.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*
*FAA Order JO 7110.65, Para 7–5–1, Authorization.*

## 7–5–7. GROUND VISIBILITY BELOW 1 MILE

14 CFR part 91 does not prohibit helicopter SVFR flight when the visibility is less than 1 mile. Treat requests for SVFR fixed-wing operations as follows when the ground visibility is officially reported at an airport as less than 1 mile:

**a.** Inform departing aircraft that ground visibility is less than 1 mile and that a clearance cannot be issued.

**b.** Inform arriving aircraft, operating outside of a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and that, unless an emergency exists, a clearance cannot be issued.

**c.** Inform arriving aircraft, operating VFR/SVFR within a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and request the pilot to advise intentions.

***PHRASEOLOGY–***
*(Name of airport) VISIBILITY LESS THAN 1 MILE. ADVISE INTENTIONS.*

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters or powered-lift aircraft) from landing at any airport within a surface area when ground visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

**d.** Authorize scheduled air carrier aircraft in the U.S. to conduct operations if ground visibility is not less than $^1/_2$ statute mile.

***NOTE–***
*14 CFR part 121 permits landing or takeoff by domestic scheduled air carriers where a local surface restriction to visibility*

*is not less than 1/2 statute mile, provided all turns after takeoff or before landing and all flights beyond 1 statute mile from the airport boundary can be accomplished above or outside the area so restricted. The pilot is solely responsible for determining if the nature of the visibility restriction will permit compliance with the provisions of 14 CFR part 121.*

**e.** Clear an aircraft to fly through the Class B, Class C, Class D, or Class E surface area if the aircraft reports flight visibility is at least 1 statute mile.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*
*FAA Order JO 7110.65, Para 7–5–1, Authorization.*

## 7–5–8. FLIGHT VISIBILITY BELOW 1 MILE

Treat requests for SVFR fixed-wing operations as follows when weather conditions are not reported at an airport and the pilot advises the flight visibility is less than 1 mile:

***NOTE–***
*14 CFR part 91 prescribes the visibility for basic VFR and SVFR operations as the official reported ground visibility at airports where provided and landing or takeoff "flight visibility" where there is no official reported ground visibility.*

**a.** Inform departing aircraft that a clearance cannot be issued.

**b.** Inform arriving aircraft operating outside of a Class B, Class C, Class D or Class E surface area that a clearance cannot be issued unless an emergency exists.

**c.** Request the intentions of an arriving aircraft operating within a Class B, Class C, Class D, or Class E surface area.

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters or powered-lift aircraft) from landing at any airport within a surface area when flight visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

# Section 6. Basic Radar Service to VFR Aircraft– Terminal

## 7–6–1. APPLICATION

**a.** Basic radar services for VFR aircraft must include:

**1.** Safety alerts.

**2.** Traffic advisories.

**3.** Limited radar vectoring when requested by the pilot.

**4.** Sequencing at locations where procedures have been established for this purpose and/or when covered by a LOA.

**b.** Apply the procedures contained in paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft, when arriving VFR aircraft are handled by approach control and provide vectoring service in accordance with Chapter 5, Radar, Section 7, Speed Adjustment, in addition to the radar services prescribed in paragraph 5–6–1, Application, and paragraph 5–6–2, Methods.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–16, Surface Areas.*
*FAA Order JO 7110.65, Para 7–6–1, Application.*
*FAA Order JO 7210.3, Chapter 12, Section 1, Terminal VFR Radar Services.*
*AIM, Para 4–1–18, Terminal Radar Services for VFR Aircraft.*

## 7–6–2. SERVICE AVAILABILITY

**a.** Inform aircraft on initial contact whenever this service cannot be provided because of radar outage and apply paragraph 7–1–3, Approach Control Service for VFR Arriving Aircraft.

**b.** Provide the service, to the extent possible using an available frequency, if an aircraft desires the service but cannot communicate on the appropriate frequencies. Aircraft which do not desire radar service may be fitted into the landing sequence by the tower. Coordination of these aircraft must be accomplished with the approach control unless a facility directive/LOA prescribes otherwise. Nonparticipating aircraft must, to the extent possible, be given the same landing sequence they would have received had they been sequenced by radar vectors.

**c.** Radar sequencing to the primary airport, when local procedures have been developed, must be provided unless the pilot states that the service is not requested. Arriving aircraft are assumed to want radar service unless the pilot states “Negative radar service,” or makes a similar comment.

## 7–6–3. INITIAL CONTACT

An aircraft sighted by the local controller at the time of first radio contact may be positioned in the landing sequence after coordination with approach control.

## 7–6–4. IDENTIFICATION

Identify the aircraft before taking action to position it in the approach sequence.

## 7–6–5. HOLDING

Hold VFR aircraft over the initial reporting fix or a fix near the airport when holding is required to establish an approach sequence.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–1–4, Visual Holding of VFR Aircraft.*

## 7–6–6. APPROACH SEQUENCE

Do not assign landing sequence numbers, when establishing aircraft in the approach sequence, unless this responsibility has been delegated in a LOA or facility directive.

***NOTE–***
*The landing sequence is ordinarily established by the tower.*

## 7–6–7. SEQUENCING

**a.** Establish radar contact before instructing a VFR aircraft to enter the traffic pattern at a specified point or vectoring the aircraft to a position in the approach sequence. Inform the pilot of the aircraft to follow when the integrity of the approach sequence is dependent on following a preceding aircraft. Ensure visual contact is established with the aircraft to follow and provide instruction to follow that aircraft.

***PHRASEOLOGY–***
*FOLLOW (description) (position, if necessary).*

**b.** Direct a VFR aircraft to a point near the airport to hold when a position is not available in the approach sequence for the runway in use. The aircraft may be vectored to another runway after coordination with the tower.

**c.** Apply the following procedures to a VFR aircraft being radar sequenced:

**1.** The provisions of paragraph 5–5–4, Minima, subparagraphs f and g.

**2.** When parallel runways are less than 2,500 feet apart, do not permit an aircraft to overtake another aircraft established on final within the facility's area of responsibility when wake turbulence separation is required.

## 7–6–8. CONTROL TRANSFER

**a.** Inform the tower of the aircraft's position and then instruct the pilot to contact the tower.

**b.** The aircraft may be instructed to contact the tower prior to the tower being advised of the aircraft's position provided:

**1.** The tower advises the aircraft is in sight, and

**2.** Space is available in the landing sequence.

**c.** Instruct the pilot to contact the tower at the appropriate point when the approach control STARS track data is being displayed on the tower's TDW display, the aircraft is tagged by STARS, and a facility directive specifies change of communications and control jurisdiction points.

***NOTE–***
*The point at which an aircraft is instructed to contact the tower is determined by prior coordination between the tower and approach control and will vary, depending on the runway in use, weather, etc. The transfer of communications ordinarily occurs at least 5 miles from the runway. The point for the transfer of communications should be a sufficient distance from the airport to permit the tower to properly sequence the aircraft, but not at a distance that could derogate the provision of radar traffic information service.*

## 7–6–9. ABANDONED APPROACH

Instruct the aircraft to change to approach control for sequencing when an aircraft, under tower control, abandons the approach and coordination with approach control reveals no immediate space in the approach sequence.

## 7–6–10. VFR DEPARTURE INFORMATION

Inform departing VFR aircraft who request radar traffic advisories when to contact departure control and the frequency to use. Provide traffic advisories in accordance with paragraph 2–1–21, Traffic Advisories, after the departure is radar identified.

# Section 7. Terminal Radar Service Area (TRSA)– Terminal

## 7–7–1. APPLICATION

Apply TRSA procedures within the designated TRSA in addition to the basic services described in Chapter 7, Visual, Section 6, Basic Radar Service to VFR Aircraft– Terminal.

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

## 7–7–2. ISSUANCE OF EFC

Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside the TRSA.

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

## 7–7–3. SEPARATION

Separate participating VFR aircraft from IFR aircraft and other participating VFR aircraft by any one of the following:

**a.** Visual separation, as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

***NOTE–***
*Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.*

**b.** 500 feet vertical separation.

**c.** Target resolution, except when ISR is being displayed.

***NOTE–***
*Apply the provisions of paragraph 5–5–4, Minima, subparagraphs g and h, when wake turbulence separation is required.*

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

## 7–7–4. HELICOPTER/POWERED-LIFT TRAFFIC

Helicopters and powered-lift aircraft need not be separated from other helicopters or powered-lift aircraft. Traffic information must be exchanged, as necessary.

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

## 7–7–5. ALTITUDE ASSIGNMENTS

**a.** Altitude information contained in a clearance, instruction, or advisory to VFR aircraft must meet MVA, MSA, or minimum IFR altitude criteria.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–2, Flight Direction.*
*FAA Order JO 7110.65, Para 4–5–3, Exceptions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*

**b.** If required, issue altitude assignments, consistent with the provisions of 14 CFR section 91.119.

***REFERENCE–***
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*
*14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*

**c.** When necessary to assign an altitude for separation purposes to VFR aircraft contrary to 14 CFR section 91.159, advise the aircraft to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer needed for separation or when leaving the TRSA.

***PHRASEOLOGY–***
*RESUME APPROPRIATE VFR ALTITUDES.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–8–11, Practice Instrument Approaches.*
*FAA Order JO 7110.65, Para 5–6–1, Application.*
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*

## 7–7–6. APPROACH INTERVAL

The tower must specify the approach interval.

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

## 7–7–7. TRSA DEPARTURE INFORMATION

**a.** At controlled airports within the TRSA, inform a departing aircraft proposing to operate within the TRSA when to contact departure control and the frequency to use. If the aircraft is properly equipped, ground control or clearance delivery must issue the appropriate beacon code.

***NOTE–***
*Departing aircraft are assumed to want TRSA service unless the pilot states, "negative TRSA service," or makes a similar comment. Pilots are expected to inform the controller of intended destination and/or route of flight and altitude.*

**b.** Provide separation until the aircraft leaves the TRSA.

**c.** Inform participating VFR aircraft when leaving the TRSA.

***PHRASEOLOGY–***
*LEAVING THE (name) TRSA,*

*and as appropriate,*

*RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.*

**d.** Aircraft departing satellite controlled airports that will penetrate the TRSA should be provided the same service as those aircraft departing the primary airport. Procedures for handling this situation must be covered in a letter of agreement or facility directives, as appropriate.

**e.** Procedures for handling aircraft departing uncontrolled satellite airports must be advertised in a facility bulletin and service provided accordingly.

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

# Section 8. Class C Service– Terminal

## 7–8–1. APPLICATION

Apply Class C service procedures within the designated Class C airspace and the associated outer area. Class C services are designed to keep ATC informed of all aircraft within Class C airspace, not to exclude operations. Two-way radio communications and operational transponder are normally required for operations within Class C airspace, but operations without radio communications or transponder can be conducted by LOA, facility directive, or special arrangement with Class C airspace controlling facility.

***REFERENCE–***
*FAA Order JO 7110.65, Para 7–2–1, Visual Separation.*
*14 CFR Section 91.215, ATC Transponder and Altitude Reporting Equipment and Use.*

## 7–8–2. CLASS C SERVICES

**a.** Class C services include the following:

**1.** Sequencing of all aircraft to the primary airport.

**2.** Standard IFR services to IFR aircraft.

**3.** Separation, traffic advisories, and safety alerts between IFR and VFR aircraft.

**4.** Mandatory traffic advisories and safety alerts between VFR aircraft.

**b.** Provide Class C services to all aircraft operating within Class C airspace.

**c.** Provide Class C services to all participating aircraft in the outer area.

**d.** Aircraft should not normally be held. However, if holding is necessary, inform the pilot of the expected length of delay.

**e.** When an outage occurs, affecting the preferred radar sensor, advise aircraft that Class C services are not available and, if appropriate, when to contact the tower, except when other radar resources are available and to the extent that coverage is sufficient, continue to provide radar services.

***NOTE–***
*Limited radar coverage in one portion of a Class C area does not justify denial of Class C radar service in the entire area.*

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

## 7–8–3. SEPARATION

Separate VFR aircraft from IFR aircraft by any one of the following:

**a.** Visual separation as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

***NOTE–***
*Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.*

**b.** 500 feet vertical separation.

**c.** Target resolution, except when ISR is being displayed.

***NOTE–***
*Apply the provisions of paragraph 5–5–4, Minima, subparagraphs g and h, when wake turbulence separation is required.*

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

## 7–8–4. ESTABLISHING TWO-WAY COMMUNICATIONS

Class C service requires pilots to establish two-way radio communications before entering Class C airspace. If the controller responds to a radio call with, "(a/c call sign) standby," radio communications have been established and the pilot can enter Class C airspace. If workload or traffic conditions prevent immediate provision of Class C services, inform the pilot to remain outside Class C airspace until conditions permit the services to be provided.

***PHRASEOLOGY–***
*(A/c call sign) REMAIN OUTSIDE CHARLIE AIRSPACE AND STANDBY.*

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

## 7–8–5. ALTITUDE ASSIGNMENTS

**a.** When necessary to assign altitudes to VFR aircraft, assign altitudes that meet the MVA, MSA, or minimum IFR altitude criteria.

**b.** Aircraft assigned altitudes which are contrary to 14 CFR section 91.159 must be advised to resume altitudes appropriate for the direction of flight when the altitude is no longer needed for separation, when leaving the outer area, or when terminating Class C service.

***PHRASEOLOGY–***
*RESUME APPROPRIATE VFR ALTITUDES.*

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

## 7–8–6. EXCEPTIONS

**a.** VFR helicopters and powered-lift aircraft need not be separated from IFR helicopters or powered-lift aircraft. Traffic information and safety alerts must be issued as appropriate.

**b.** Hot air balloons need not be separated from IFR aircraft. Traffic information and safety alerts must be issued as appropriate.

## 7–8–7. ADJACENT AIRPORT OPERATIONS

**a.** Aircraft that will penetrate Class C airspace after departing controlled airports within or adjacent to Class C airspace must be provided the same services as those aircraft departing the primary airport. Procedures for handling this situation must be covered in a LOA or a facility directive, as appropriate.

**b.** Aircraft departing uncontrolled airports within Class C airspace must be handled using procedures advertised in a Letter to Airmen.

## 7–8–8. TERMINATION OF SERVICE

Unless aircraft are landing at secondary airports or have requested termination of service while in the outer area, provide services until the aircraft departs the associated outer area. Terminate Class C service to aircraft landing at other than the primary airport at a sufficient distance from the airport to allow the pilot to change to the appropriate frequency for traffic and airport information.

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

*or*

*CONTACT (facility identification).*

# Section 9. Class B Service Area– Terminal

## 7–9–1. APPLICATION

**a.** Apply Class B services and procedures within the designated Class B airspace.

**b.** No person may operate an aircraft within Class B airspace unless:

**1.** The aircraft has an operable two-way radio capable of communications with ATC on appropriate frequencies for that Class B airspace.

**2.** The aircraft is equipped with the applicable operating transponder and automatic altitude reporting equipment specified in paragraph (a) of 14 CFR section 91.215, except as provided in paragraph (d) of that section.

## 7–9–2. VFR AIRCRAFT IN CLASS B AIRSPACE

**a.** VFR aircraft must obtain an ATC clearance to operate in Class B airspace.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–18, Operational Requests.*
*FAA Order JO 7110.65, Para 2–4–22, Airspace Classes.*

***PHRASEOLOGY–***
*CLEARED THROUGH/TO ENTER/OUT OF BRAVO AIRSPACE,*

*and as appropriate,*

*VIA (route). MAINTAIN (altitude) WHILE IN BRAVO AIRSPACE.*

*or*

*CLEARED AS REQUESTED.*

*(Additional instructions, as necessary.)*

*REMAIN OUTSIDE BRAVO AIRSPACE. (When necessary, reason and/or additional instructions.)*

***NOTE–***
**1.** *Assignment of radar headings, routes, or altitudes is based on the provision that a pilot operating in accordance with VFR is expected to advise ATC if compliance will cause violation of any part of the CFR.*

**2.** *Separation and sequencing for VFR aircraft is dependent upon radar. Efforts should be made to segregate VFR traffic from IFR traffic flows when a radar outage occurs.*

**b.** Approve/deny requests from VFR aircraft to operate in Class B airspace based on workload, operational limitations and traffic conditions.

**c.** Inform the pilot when to expect further clearance when VFR aircraft are held either inside or outside Class B airspace.

**d.** Inform VFR aircraft when leaving Class B airspace.

***PHRASEOLOGY–***
*LEAVING (name) BRAVO AIRSPACE,*

*and as appropriate,*

*RESUME OWN NAVIGATION, REMAIN THIS FREQUENCY FOR TRAFFIC ADVISORIES, RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO.*

## 7–9–3. METHODS

**a.** To the extent practical, clear large turbine engine-powered airplanes to/from the primary airport using altitudes and routes that avoid VFR corridors and airspace below the Class B airspace floor where VFR aircraft are operating.

***NOTE–***
*Pilots operating in accordance with VFR are expected to advise ATC if compliance with assigned altitudes, headings, or routes will cause violation of any part of the CFR.*

**b.** Vector aircraft to remain in Class B airspace after entry. Inform the aircraft when leaving and reentering Class B airspace if it becomes necessary to extend the flight path outside Class B airspace for spacing.

***NOTE–***
*14 CFR section 91.131 states that "Unless otherwise authorized by ATC, each person operating a large turbine engine-powered airplane to or from a primary airport for which a Class B airspace area is designated must operate at or above the designated floors of the Class B airspace area while within the lateral limits of that area." Such authorization should be the exception rather than the rule.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–1–6, Deviation Advisories.*

**c.** Aircraft departing controlled airports within Class B airspace will be provided the same services as those aircraft departing the primary airport.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–18, Operational Requests.*

## 7–9–4. SEPARATION

**a.** Standard IFR services to IFR aircraft.

**b.** VFR aircraft must be separated from VFR/IFR aircraft that weigh more than 19,000 pounds and turbojets by no less than:

**1.** 1 ½ miles separation, or

***NOTE–***
*When ISR is being displayed, discontinue 1 ½ –NM separation.*

**2.** 500 feet vertical separation, or

***NOTE–***
*Apply the provisions of paragraph 5–5–4, Minima, when wake turbulence separation is required.*

**3.** Visual separation, as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

***NOTE–***
*Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.*

**c.** VFR aircraft must be separated from all VFR/IFR aircraft which weigh 19,000 pounds or less by a minimum of:

**1.** Target resolution, except when ISR is being displayed, or

**2.** 500 feet vertical separation, or

***NOTE–***
**1.** *Apply the provisions of paragraph 5–5–4, Minima, when wake turbulence separation is required.*

**2.** *Aircraft weighing 19,000 pounds or less are listed in FAA Order JO 7360.1, Aircraft Type Designators.*

***REFERENCE–***
*FAA Order JO 7360.1, Para 2–2, How Designators are Formulated.*

**3.** Visual separation, as specified in paragraph 7–2–1, Visual Separation, paragraph 7–4–2, Vectors for Visual Approach, and paragraph 7–6–7, Sequencing.

***NOTE–***
*Issue wake turbulence cautionary advisories in accordance with paragraph 2–1–20, Wake Turbulence Cautionary Advisories.*

***REFERENCE–***
*P/CG Term – Lateral Separation.*
*P/CG Term – Radar Separation.*
*P/CG Term – Target Resolution.*
*P/CG Term – Visual Separation.*

## 7–9–5. TRAFFIC ADVISORIES

**a.** Provide mandatory traffic advisories and safety alerts, between all aircraft.

**b.** Apply merging target procedures in accordance with paragraph 5–1–4, Merging Target Procedures.

## 7–9–6. HELICOPTER/POWERED-LIFT TRAFFIC

VFR helicopters and powered-lift aircraft need not be separated from VFR or IFR helicopters or powered-lift aircraft. Traffic advisories and safety alerts must be issued as appropriate.

## 7–9–7. ALTITUDE ASSIGNMENTS

**a.** Altitude information contained in a clearance, instruction, or advisory to VFR aircraft must meet MVA, MSA, or minimum IFR altitude criteria.

**b.** Issue altitude assignments, if required, consistent with the provisions of 14 CFR section 91.119.

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–2, Flight Direction.*
*FAA Order JO 7110.65, Para 4–5–3, Exceptions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*
*14 CFR Section 91.119, Minimum Safe Altitudes: General.*
*14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*

**c.** Aircraft assigned altitudes which are contrary to 14 CFR section 91.159 must be advised to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer required or when leaving Class B airspace.

***PHRASEOLOGY–***
*RESUME APPROPRIATE VFR ALTITUDES.*

## 7–9–8. APPROACH INTERVAL

The tower must specify the approach interval.

# Section 3. Special Use, ATC–Assigned Airspace, and Stationary ALTRVs

## 9–3–1. APPLICATION

Apply the procedures in this section to aircraft operating in proximity to special use, ATC-assigned airspace (ATCAA), and stationary ALTRVs unless the airspace is designated an alert area/controlled firing area or one of the following conditions exist:

***NOTE–***
*These procedures are not applicable to Alert Areas or Controlled Firing Areas.*

***REFERENCE–***
*P/CG Term – Special Use Airspace.*

**a.** The pilot informs you that permission has been obtained from the using agency to operate in the airspace.

**b.** The using agency informs you they have given permission for the aircraft to operate in the airspace.

***NOTE–***
*Using agency permission may be relayed to the pilot.*

**c.** The restricted/warning area, MOA, ATCAA, or stationary ALTRV has been released to the controlling agency.

**d.** The aircraft is on an approved ALTRV, unless the airspace area in question is an ATCAA.

***NOTE–***
*Mission project officers are responsible for obtaining approval for ALTRV operations within prohibited/ restricted/warning areas, MOAs, and stationary ALTRVs.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 9–3–4, Transiting Active SUA/ATCAA.*

**e.** Operations in special use airspace and stationary ALTRVs located in offshore/oceanic airspace will be conducted in accordance with the procedures in Chapter 8, Offshore/Oceanic Procedures.

## 9–3–2. SEPARATION MINIMA

Unless clearance of nonparticipating aircraft in/through/adjacent to a prohibited/restricted/warning area/MOA/ATCAA/stationary ALTRV is provided for in a letter of agreement (LOA) or letter of procedure (LOP), separate nonparticipating aircraft from active special use airspace, ATCAAs, and stationary ALTRVs by the following minima:

***NOTE–***
*Nonparticipating aircraft refers to those aircraft for which you have separation responsibility and which have not been authorized by the using agency to operate in/through the special use airspace, ATCAA, or stationary ALTRV. VFR traffic is not prohibited from transiting stationary ALTRVs or transitional hazard areas (THA).*

**a.** Assign an altitude consistent with paragraph 4–5–2, Flight Direction, and 4–5–3, Exceptions, which is at least 500 feet (above FL 290-1000 feet) above/below the upper/lower limit of the prohibited/ restricted/warning area/MOA/ATCAA/stationary ALTRV.

***REFERENCE–***
*FAA Order JO 7210.3, Para 2-1-18, Prohibited/Restricted Areas and Stationary ALTRVs.*

**b.** Provide radar separation of 3 miles (FL 600 and above – 6 miles) from the special use airspace, ATCAA, or stationary ALTRV peripheral boundary. EXCEPTIONS:

**1.** Some prohibited/restricted/warning areas are established for security reasons or to contain hazardous activities and do not require radar separation of 3 miles (FL 600 and above – 6 miles) from the special use airspace. Where facility management has identified these areas as outlined in FAA Order JO 7210.3, Facility Operation and Administration, vector aircraft to remain clear of the peripheral boundary.

**2.** For stationary ALTRVs issued for the purpose of space launch or reentry operations, ensure aircraft remain clear of the peripheral boundary.

**c.** Clear aircraft on airways or routes whose widths or protected airspace do not overlap the peripheral boundary.

**d.** For stationary ALTRVs and temporary flight restrictions (TFR) issued for the purpose of space launch or reentry operations to protect aircraft hazard areas (AHA):

**1.** Do not allow nonparticipating aircraft to operate in an AHA unless real-time notifications of the actual start of activity and end of activity of the AHA is provided to affected facilities via ATO Space Operations coordination.

**2.** Do not provide ATC services to aircraft at airports that lie within an AHA unless real−time notifications of the actual start of activity and end of activity of the AHA is provided to affected facilities via ATO Space Operations coordination.

***REFERENCE−***
*FAA Order JO 7210.3, Para 20−7−4, Airports within Aircraft Hazard Areas and Transitional Hazard Areas.*

**e.** For NOTAMs issued for the purpose of space launch or reentry operations to protect THAs:

**1.** Aircraft may enter provided they are not holding, loitering, or hovering, and are cleared on:

**(a)** Routing approved by ATO Space Operations that has an angular difference of 30 through 150 degrees from the launch/reentry course, or

**(b)** Crossing courses that have an angular difference of 45 through 135 degrees from the launch/reentry course.

***NOTE−***
*The intent is to provide a crossing angle that accounts for the effects of wind.*

***REFERENCE−***
*FAA Order JO 7110.65, Para 1−2−2, Course Definitions.*

**2.** Do not provide ATC services to aircraft at airports that lie within a THA unless real−time notifications of the actual start of activity and end of activity of the THA is provided to affected facilities via ATO Space Operations coordination.

***REFERENCE−***
*FAA Order JO 7210.3, Para 20−7−4, Airports within Aircraft Hazard Areas and Transitional Hazard Areas.*

## 9−3−3. VFR-ON-TOP

If the aircraft's route, track, or altitude may cause it to enter an active Prohibited/Restricted/Warning Area, MOA, or ATCAA:

**a.** Inform the pilot to conduct flight "VFR−on−top" at least 500 feet above the upper limit or below the lower limit of the airspace (subject to paragraph 7−3−1, VFR−on−top); or

***PHRASEOLOGY−***
*MAINTAIN VFR-ON-TOP AT LEAST 500 FEET ABOVE/BELOW (upper/lower limit of airspace) ACROSS (name or number of airspace) BETWEEN (fix) AND (fix);*

*and if the airspace is an ATCAA,*

*(name of ATCAA) IS ATC ASSIGNED AIRSPACE.*

***REFERENCE−***
*FAA Order JO 7110.65, Para 7−1−1, Class A Airspace Restrictions.*

**b.** Clear the aircraft via a routing which provides approved separation from the airspace.

**c.** *Exception:* Some Prohibited/Restricted Areas are established for security reasons or to contain hazardous activities not involving aircraft operations. The addition of 500 (or 1,000) feet to the upper/lower limit of these Prohibited/Restricted Areas is not required if the areas have been identified by facility management.

# Section 8. Unidentified Anomalous Phenomena (UAP) Reports

## 9–8–1. GENERAL

Inform the operations supervisor/CIC of any reported or observed unidentified anomalous phenomena (UAP)/unexplained phenomena activity.

***REFERENCE–***
*FAA Order JO 7210.3, Para 4–7–4, Unidentified Anomalous Phenomena (UAP) Reports.*

**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–***

*FAA Order JO 7110.65, Para 2–9–3, Content.*
*FAA Order JO 7210.3, Para 2–1–10, Handling MANPADS Incidents.*
*FAA Order JO 7610.4, Para 3–1–3, 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–***

*FAA Order JO 7110.65, Para 2–9–3, Content.*
*FAA Order JO 7210.3, Para 2–1–30, 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.

***NOTE–***
*In the event of an Emergency Autoland system activation, the system will select a suitable airport and advise ATC. The Emergency Autoland system does not consider closed runways, equipment on the runway, construction, or other possible airport hazards when selecting a suitable airport.*

**b.** Consideration to the provisions of subparagraph a and paragraph 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 paragraph 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)/EMERGENCY ALTITUDE MAP (EAM)

**a.** The Terminal Area EOVM and En Route Air Traffic Control Services EAM are 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–***
*FAA Order JO 7210.3, Para 3–8–4, Emergency Obstruction Video Map (EOVM).*
*FAA Order JO 7210.3, Para 3–8–5, Emergency Altitude Map (EAM).*

## 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–***
*FAA Order 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)/operations supervisor (OS)/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/OS/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 844–432–2962 (toll free).*

**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–***
*FAA Order JO 7210.3, Para 2–1–37, Reporting Death, Illness, or Other Public Health Risk On Board Aircraft.*

# Chapter 14. Data Link Communications

## Section 1. Terminal Procedures for Issuing Automated Clearances

### 14–1–1. PRE-DEPARTURE CLEARANCE (PDC)

**a.** PDC must be utilized in accordance with this order and the local facility directive for transmitting automated clearances developed in accordance with FAA Order JO 7210.3, Facility Operation and Administration.

**b.** Review all clearances for accuracy and route integrity.

**c.** Ensure all information is complete and understandable to the recipient, and the route of flight is continuous.

**d.** PDC does not permit amended or revised flight plans to be transmitted. Revised or amended flight plans require the clearance to be verbally issued to the flight crew.

***NOTE–***
*A flight plan that initially generates in the tower, with a route assigned by automation, (for example: ADR) is not considered revised or amended and may be transmitted.*

**e.** PDC information must be operational in nature. All selectable fields will be predefined by the Terminal Automation System (TAS) and available from a drop-down menu.

**f.** For a minimum of 60 days following the commissioning of a Terminal Data Link System (TDLS), the facility Automatic Terminal Information Service (ATIS) must broadcast that PDC is available.

### 14–1–2. CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC) – DEPARTURE CLEARANCE (DCL)

**a.** CPDLC DCL must be utilized in accordance with this order and the local facility directive for transmitting automated clearances developed in accordance with FAA Order JO 7210.3, Facility Operation and Administration.

**b.** All clearances must be reviewed for accuracy and route integrity. Action must be taken to ensure all information is complete and understandable to the recipient, and the route of flight is continuous.

**c.** CPDLC permits amended or revised flight plans to be transmitted. Revised or amended flight plans that cannot be delivered using CPDLC must be verbally issued to the flight crew.

**d.** CPDLC clearance information must be operational in nature. All selectable fields will be predefined by the TAS and available from a drop-down menu.

**e.** For a minimum of 60 days following the commissioning of a CPDLC capability, the facility ATIS must broadcast that CPDLC is available.

### 14–1–3. DEPARTURE CLEARANCE (DCL) APPLICATION (PDC/CPDLC) SELECTABLE FIELDS

**a.** The DCL application provides up to nine Selectable Fields for the tower controller to enter all other clearance information. Each Selectable Field has a purpose and should only be used for that purpose. For standardization, facilities must use DCL Application Selectable Fields as follows:

**1.** Selectable Field 1, SID Field, must contain:

**(a)** the correctly filed SID, or

**(b)** the SID assigned by the EAS, or

**(c)** if No SID is filed or assigned by EAS, the controller must either select a SID or, if no SID is to be assigned, select the "NO SID" option.

**2.** Selectable Field 2, Transition Field, is reserved for named Transitions on DPs. Selectable Field 2 must contain:

**(a)** the correctly filed Transition, or

**(b)** the Transition assigned by the EAS, or

**(c)** if No Transition is filed or assigned by EAS, the controller must either select a Transition or, if no Transition is to be assigned, select the "----" option.

**3.** Selectable Field 3, Climb Out Field, is reserved for climb related information, such as heading assignments, expected vector assignments, or defined SID climbs. Climb Out Field instructions must never contradict SID instructions and may reiterate pertinent SID information. This field is limited to 32 characters and only those entries adapted by the TAS will be available for selection.

**4.** Selectable Field 4, CLIMB VIA Field, is reserved for use when a SID is assigned or selected, and will contain CLIMB VIA SID or CLIMB VIA SID EXCEPT MAINTAIN (altitude) information as follows:

**(a)** If the assigned SID contains vertical guidance from take-off to climb to an altitude to maintain, and it is intended that an aircraft vertically navigate in accordance with the SID assigned or entered in Selectable Field 1, then Selectable Field 4 must contain the instruction "CLIMB VIA SID", or

**(b)** If the assigned SID does not have an initial altitude to maintain, but contains vertical guidance, and it is intended that an aircraft vertically navigate in accordance with the SID assigned or entered in Selectable Field 1, then Selectable Field 4 must contain the instruction "CLIMB VIA SID EXCEPT MAINTAIN (altitude)", or

**(c)** If the assigned altitude is different from the published altitude in the SID, the altitude may be amended using CLIMB VIA SID EXCEPT MAINTAIN (altitude).

**5.** Selectable Field 5, Maintain Altitude Field, is reserved for initial altitude Assignment. If no SID is assigned or the assigned SID does not contain either an initial altitude or vertical guidance, then Selectable Field 5 must contain the instruction "MAINTAIN (assigned altitude)".

**6.** Selectable Field 6, Expected Altitude Field, is reserved for specifying when the Expected Altitude would be used in the event of lost communications.

**7.** Selectable Field 7, Departure Frequency Field, is reserved for Departure Control Frequency Assignment. The selection of "SEE SID" may be used if the SID contains Departure Control Frequency Assignment specific to the intended departure procedure.

**8.** Selectable Field 8, Contact Field, is reserved for additional contact information in accordance with facility directives. This field is limited to 32 characters.

**9.** Selectable Field 9, Local Information Field, is reserved for additional information in accordance with facility directives. This field is limited to 34 characters and must not contradict information contained elsewhere in a departure clearance.

# Section 2. En Route Controller Pilot Data Link Communications (CPDLC) – Domestic

***NOTE–***
*Controller Pilot Data Link Communications (CPDLC) messages in use in domestic en route operations are contained in TBL 14–2–1 through TBL 14–2–23.*

## 14–2–1. GENERAL

**a.** The use of CPDLC is approved to augment the voice communication requirements of FAA Order JO 7110.65 for all altitudes, routes, speeds, holding clearances, altimeters, advisories, and frequency changes.

**b.** The sector team is responsible for sending and responding to CPDLC messages.

**c.** Controllers should minimize the use of CPDLC during critical phases of flight.

**d.** CPDLC should not be used to issue immediate or expeditious clearances unless voice communication is not operationally feasible.

**e.** Ensure there are no trajectory altering clearances (TAC) open prior to transfer of communication unless otherwise coordinated.

**f.** Use of the automated Voice Communication Indicator (VCI) during CPDLC operations complies with the requirements of FAA Order JO 7110.65 paragraph 2–1–17, Radio Communications.

**g.** Unless otherwise coordinated, the last controller working the aircraft before it exits the continental United States (U.S.) must ensure the CPDLC connection is terminated upon transfer of communication to any non-U.S. facility or Advanced Technologies and Oceanic Procedures (ATOP) sector.

**h.** Coordination must be accomplished with the sector with eligibility prior to terminating a CPDLC connection from any other position or adapted air traffic workstation.

**i.** In the event of receipt of an emergency pilot initiated downlink (PID), follow the provisions of FAA Order JO 7110.65, Chapter 10, Emergencies.

**j.** When responding to a PID for a weather deviation request via CPDLC, and the aircraft has a clearance to climb/descend via or has a crossing restriction, the controller must unable the request and revert to voice communications.

***NOTE–***
*After a climb via or descend via clearance has been issued, a vector/deviation off 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 published top or bottom altitude.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*

## 14–2–2. ABNORMAL SITUATIONS

**a.** When an Initial Contact (IC) mismatch or confirm assigned altitude (CAA) downlink time-out indicator is displayed in the full data block (FDB) and ACL, the controller who has the aircraft on their voice frequency must use voice communication to verify the assigned altitude of the aircraft and acknowledge the IC mismatch/time-out indicator.

***NOTE–***
*All sectors in the controlling ARTCC displaying an FDB will show the IC mismatch/time-out indicator.*

**b.** Abnormal CPDLC indications must be acknowledged by the controller only after required coordination has been performed.

**c.** Use voice communications when overriding an open CPDLC clearance and issuing alternate control instructions. If the CPDLC clearance contains multiple elements, the entire clearance must be restated.

***PHRASEOLOGY–***
*DISREGARD CPDLC (type) CLEARANCE (description of clearance) AND SEND AN UNABLE (alternate clearance).*

***EXAMPLE–***
*"American Fifty-Two, disregard CPDLC altitude clearance to flight level three five zero and send an unable. Climb and maintain flight level three one zero."*
*"Delta Four Twenty-Three, disregard CPDLC route clearance direct Memphis and send an unable. Cleared direct Nashville, direct Memphis, rest of route unchanged."*
*"United Thirty-Two, disregard CPDLC hold clearance at JKSON and send an unable. Cleared to Atlanta airport via direct JKSON GLAVN one, maintain flight level three three zero."*
*"Alaska Ten, disregard CPDLC crossing and speed clearance at EMZOH and send an unable. Cross EMZOH at and maintain flight level two eight zero at two five zero knots."*

***NOTE–***
*Controllers should be aware that the CPDLC clearance being overridden may not have been received on the flight deck at the time of the voice communication. This phraseology tells the pilot exactly which clearance requires an UNABLE response.*

**d.** Controllers may cancel an open uplink only after ensuring the pilot has been issued and acknowledged, via voice communication, the superseding ATC clearance.

***NOTE–***
**1.** *The provisions of this paragraph are not intended to replace the requirements to override a CPDLC clearance as stipulated in paragraph 14–2–3.*

**2.** *Canceling an uplink only removes the uplink from the CPDLC ground system. The uplink remains open on the flight deck. Controllers must instruct the pilot to respond with an unable to close the uplink on the flight deck.*

**3.** *The ability to cancel an uplink is only provided to allow controllers to clear open uplink indications in the FDB and ACL. Clearing these indications allows controllers to continue CPDLC operations with the affected aircraft.*

**e.** For No Radio (NORDO) aircraft with an active CPDLC connection:

**1.** It is permissible for the sector with eligibility to mark the aircraft on frequency to allow CPDLC communications with that aircraft.

**2.** Use procedures in FAA Order JO 7110.65, paragraphs 5–2–4, Radio Failure, and 10–4–4, Communications Failure, for all CPDLC aircraft that experience a two-way voice radio communications failure.

## 14–2–3. SYSTEM SITUATIONS

**a.** If the CPDLC system fails to provide a necessary automated altimeter setting to an aircraft, the controller must issue an altimeter setting in accordance with FAA Order JO 7110.65, Chapter 2, Section 7, Altimeter Settings.

***NOTE–***
*If the CPDLC system fails to provide an automated altimeter setting, the controller with eligibility will be notified with an abnormal indication in the FDB. Automated altimeters are only sent in response to a monitor transfer of communication (TOC), or an altitude uplink when the assigned altitude is below FL 180.*

**b.** When a CPDLC connection is unexpectedly lost with an aircraft, and voice communication had not previously been established, the controller must ensure voice communication is established and maintained with that aircraft.

**c.** Whenever there is a shutdown or failure of CPDLC service:

**1.** Controllers must use voice to broadcast a message alerting pilots to the shutdown and request no pilot downlinks until further advised.

***EXAMPLE–***
*"Attention all aircraft; CPDLC no longer in use. Do not downlink any messages until further advised."*

**2.** Controllers must take action to ensure that any open or abnormally closed uplinks at the time of the shutdown are resolved, by voice, with each aircraft.

## 14–2–4. SPECIFIC UPLINKS

**a.** Advisory Messages

**1.** Control instructions and messages that require an acknowledgement from the aircraft must not be issued via advisory/free text messages.

**2.** When using abbreviations to compose weather related or advisory/free text messages, comply with FAA Order JO 7340.2, Contractions.

***NOTE–***
*Some common meteorological abbreviations:*
1. *Extreme = EXTRM*
2. *Severe = SEV*
3. *Heavy = HVY*
4. *Moderate = MOD*
5. *Light = LGT*
6. *Turbulence = TURB*
7. *Continuous = CONS*
8. *Occasional = OCNL*
9. *Intermittent = INTMT*

**b.** Speeds

**1.** When using CPDLC to issue a speed assignment to an aircraft at or above FL 390, the WILCO response satisfies the requirement in JO 7110.65, 5–7–2b, regarding pilot concurrence.

**2.** CPDLC must not be used to issue a speed adjustment to an aircraft established on a route or procedure that has published speed restrictions.

**c.** Holding

**1.** CPDLC must not be used to clear an aircraft out of holding.

***NOTE–***
*Because a route uplink does not specify a new clearance limit, clearing an aircraft out of holding must be done via voice.*

**2.** If an aircraft has a clearance to climb/descend via, holding instructions must not be issued via CPDLC.

***NOTE–***
*The vertical navigation portion of the procedure must be canceled prior to using CPDLC to issue holding instructions.*

*TBL 14–2–1*

**Response Attribute of CPDLC Message Element**

| Response Attribute | Description |
|---|---|
| | **For Uplink Message** |
| W/U | Response required.<br>Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR<br>NOTE– WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.<br>FANS 1/A.— WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. |
| A/N | Response required.<br>Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR<br>NOTE– AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.<br>FANS 1/A.— AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY |
| R | Response required.<br>Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR<br>NOTE– ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.<br>FANS 1/A.— ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS 1/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an “R” response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction. |
| Y | Response required.<br>Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required). |
| N | No response required unless logical acknowledgement is required.<br>Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR<br>FANS 1/A.— “N” is defined as “no response is required,” but not used. Under some circumstances, an ERROR message will also close an uplink message. |
| NE | [Not defined in Doc 4444]<br>FANS 1/A.— The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute. |

| Response Attribute | Description |
|---|---|
| | **For Downlink Message** |
| Y | Response required. Yes<br>Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required). |
| N | Response required. No, unless logical acknowledgement required.<br>Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR<br>FANS 1/A.— Aircraft do not have the capability to receive technical responses to downlink message elements with an "N" response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS 1/A aircraft and Doc 4444. As an example, most emergency messages have an "N" response attribute for FANS 1/A whereas Doc 4444 defines a "Y" response attribute for them. As a consequence, for FANS 1/A aircraft, ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received. |

***TBL 14–2–2***

**Route Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM74 | PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed directly to the specified position. |
| UM75 | WHEN ABLE PROCEED DIRECT TO (*position*)<br>*NOTE– This message element is equivalent to SUPU–5 plus RTEU–2 in Doc 4444.* | W/U | Instruction to proceed directly to the specified position. |
| UM77 | AT (*position*) PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed, at the specified position, directly to the next specified position. |
| UM78 | AT *(altitude)* PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed directly to the specified position upon reaching the specified altitude. |
| UM79 | CLEARED TO (*position*) VIA (*route clearance*) | W/U | Instruction to proceed to the specified position via the specified route. |
| UM80 | CLEARED (*route clearance*) | W/U | Instruction to proceed via the specified route. |
| UM83 | AT (*position*) CLEARED (*route clearance*) | W/U | Instruction to proceed from the specified position via the specified route. |
| UM91 | HOLD AT (*position*) MAINTAIN *(altitude)* INBOUND TRACK (*degrees*) (*direction*) TURN LEG TIME (*leg type*) | W/U | Instruction to enter a holding pattern at the specified position in accordance with the specified instructions.<br>*NOTE– RTEU–13 EXPECT FURTHER CLEARANCE AT (time) is appended to this message when an extended hold is anticipated.* |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM92 | HOLD AT (*position*) AS PUBLISHED MAINTAIN *(altitude)* | W/U | Instruction to enter a holding pattern at the specified position in accordance with the published holding instructions.<br>*NOTE– RTEU–13 EXPECT FURTHER CLEARANCE AT TIME (time) is appended to this message when an extended hold is anticipated.* |
| UM93 | EXPECT FURTHER CLEARANCE AT (*time*) | W/U | Notification that an onwards clearance may be issued at the specified time. |
| UM137 | CONFIRM ASSIGNED ROUTE<br>*NOTE– NE response attribute.* | Y | Request to confirm the assigned route. |

***TBL 14–2–3***

**Route Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM22 | REQUEST DIRECT TO (*position*) | Y | Request for a direct clearance to the specified position. |
| DM23 | REQUEST (*procedure name*) | Y | Request for the specified procedure or clearance name. |
| DM24 | REQUEST (*route clearance*) | Y | Request for the specified route. |
| DM40 | ASSIGNED ROUTE (*route clearance*) | N | Confirmation that the assigned route is the specified route. |

***TBL 14–2–4***

**Lateral Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM82 | CLEARED TO DEVIATE UP TO (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction allowing deviation up to the specified distance(s) from the cleared route in the specified direction(s). |
| UM127 | REPORT BACK ON ROUTE<br>*NOTE– R response attribute.* | W/U | Instruction to report when the aircraft is back on the cleared route. |

***TBL 14–2–5***
**Lateral Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM27 | REQUEST WEATHER DEVIATION UP TO (*specified distance*) (*direction*) OF ROUTE | Y | Request for a weather deviation up to the specified distance(s) off track in the specified direction(s). |
| DM41 | BACK ON ROUTE | N | Report indicating that the cleared route has been rejoined. |
| DM59 | DIVERTING TO (*position*) VIA (*route clearance*)<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating diverting to the specified position via the specified route, which may be sent without any previous coordination done with ATC. |
| DM60 | OFFSETTING (*distance offset*) (*direction*) OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating that the aircraft is offsetting to a parallel track at the specified distance in the specified direction off from the cleared route. |
| DM80 | DEVIATING (*deviation offset*) (*direction*) OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating deviating specified distance or degrees in the specified direction from the cleared route. |

***NOTE–***
*ICAO Document 10037, Global Operational Data Link (GOLD) Manual, has these values set to Y in their table.*

***TBL 14–2–6***
**Altitude Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM19 | MAINTAIN *(altitude)* | W/U | Instruction to maintain the specified altitude. |
| UM20 | CLIMB TO AND MAINTAIN *(altitude)* | W/U | Instruction that a climb to the specified altitude is to commence and once reached is to be maintained. |
| UM23 | DESCEND TO AND MAINTAIN *(altitude)* | W/U | Instruction that a descent to the specified altitude is to commence and once reached is to be maintained. |
| UM30 | MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction to maintain the specified vertical range. |
| UM31 | CLIMB TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction that a climb to the specified vertical range is to commence and once reached is to be maintained. |
| UM32 | DESCEND TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction that a descent to the specified vertical range is to commence and once reached is to be maintained. |

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM36 | EXPEDITE CLIMB TO *(altitude)*<br>*NOTE– This message element is equivalent to SUPU–3 plus LVLU–6 in Doc 4444.* | W/U | Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM37 | EXPEDITE DESCENT TO *(altitude)* | W/U | Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM38 | IMMEDIATELY CLIMB TO *(altitude)*<br>*NOTE– This message element is equivalent to EMGU–2 plus LVLU–6 in Doc 4444.* | W/U | Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM39 | UM39 IMMEDIATELY DESCEND TO *(altitude)*<br>*NOTE– This message element is equivalent to EMGU–2 plus LVLU–9 in Doc 4444.* | W/U | Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM135 | CONFIRM ASSIGNED ALTITUDE<br>*NOTE– NE response attribute.* | Y | Request to confirm the assigned altitude. |
| UM177 | AT PILOTS DISCRETION<br>See Note | NE | An instruction used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever they wish and conducting the climb or descent at any rate they wish. The pilot may temporarily level off at any intermediate altitude. However, once the aircraft has vacated an altitude, it may not return to that altitude. |

***NOTE–***
*ICAO Document 10037, Global Operational Data Link (GOLD) Manual, does not include this in its tables.*

***TBL 14–2–7***
**Altitude Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM6 | REQUEST *(altitude)* | Y | Request to fly at the specified altitude. |
| DM7 | REQUEST BLOCK *(altitude)* TO *(altitude)* | Y | Request to fly at the specified vertical range. |
| DM9 | REQUEST CLIMB TO *(altitude)* | Y | Request for a climb to the specified level or vertical range. |
| DM10 | REQUEST DESCENT TO *(altitude)* | Y | Request for a descent to the specified level or vertical range. |
| DM38 | ASSIGNED ALTITUDE *(altitude)* | N | Confirmation that the assigned altitude is the specified altitude or vertical range. |

| | | | |
|---|---|---|---|
| DM61 | DM61 DESCENDING TO (altitude)<br>*NOTE– Urgent alert attribute.* | N | Report indicating descending to the specified altitude. |
| DM77 | DM77 ASSIGNED BLOCK (*altitude*) TO (*altitude*) | N | Confirmation that the assigned vertical range is the specified vertical range. |

***TBL 14–2–8***

**Crossing Constraint Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM46 | CROSS (*position*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM49 | CROSS (*position*) AT AND MAINTAIN (*altitude*)<br>*NOTE– This message element is equivalent to CSTU–1 plus LVLU–5 in Doc 4444.* | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM51 | CROSS (*position*) AT (*time*) | W/U | Instruction that the specified position is to be crossed at the specified time. |
| UM52 | CROSS (*position*) AT OR BEFORE (*time*) | W/U | Instruction that the specified position is to be crossed before the specified time. |
| UM53 | CROSS (*position*) AT OR AFTER (*time*) | W/U | Instruction that the specified position is to be crossed after the specified time. |
| UM55 | CROSS (*position*) AT (*speed*) | W/U | Instruction that the specified position is to be crossed at the specified speed. |
| UM56 | CROSS (*position*) AT OR LESS THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or less than the specified speed. |
| UM57 | CROSS (*position*) AT OR GREATER THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or greater than the specified speed. |
| UM61 | CROSS (*position*) AT AND MAINTAIN (*altitude*) AT (*speed*)<br>*NOTE– This message element is equivalent to CSTU–14 plus LVLU–5 in Doc 4444.* | W/U | Instruction that the specified position is to be crossed at the specified altitude and speed. |

***TBL 14–2–9***

**Speed Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM106 | MAINTAIN (*speed*) | W/U | Instruction to maintain the specified speed. |
| UM107 | MAINTAIN PRESENT SPEED | W/U | Instruction to maintain the present speed. |
| UM108 | MAINTAIN (*speed*) OR GREATER | W/U | Instruction to maintain the specified speed or greater. |
| UM109 | MAINTAIN (*speed*) OR LESS | W/U | Instruction to maintain the specified speed or less. |

| | | | |
|---|---|---|---|
| UM116 | RESUME NORMAL SPEED | W/U | Instruction to resume a normal speed. The aircraft no longer needs to comply with a previously issued speed restriction. |
| UM134 | CONFIRM SPEED<br>*NOTE– NE response attribute.* | Y | Request to report the speed defined by the speed type(s). |

***TBL 14–2–10***

**Speed Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM34 | PRESENT SPEED (*speed*) | N | Report indicating the speed defined by the specified speed types is the specified speed. |

***TBL 14–2–11***

**Air Traffic Advisory Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM154 | RADAR SERVICES TERMINATED | R | Advisory that the ATS surveillance service is terminated. |

***TBL 14–2–12***

**Voice Communications Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM117 | CONTACT (*ICAO unit name*) (*frequency*) | W/U | Instruction to establish voice contact with the specified ATS unit on the specified frequency. |
| UM120 | MONITOR (*ICAO unit name*) (*frequency*) | W/U | Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency. |

***TBL 14–2–13***

**Voice Communications Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM20 | REQUEST VOICE CONTACT<br>*NOTE– Used when a frequency is not required.* | Y | Request for voice contact on the specified frequency. |

***TBL 14–2–14***

**Emergency/Urgency Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM38 | IMMEDIATELY CLIMB TO (*altitude*)<br>Used in combination with LVLU–6 and LVLU–9, which is implemented in FANS 1/A as above | Y | Instruction to immediately comply with the associated instruction to avoid imminent situation. |
| UM39 | IMMEDIATELY DESCEND TO (*altitude*)<br>Used in combination with LVLU–6 and LVLU–9, which is implemented in FANS 1/A as above | Y | Instruction to immediately comply with the associated instruction to avoid imminent situation. |

***TBL 14–2–15***

**Emergency/Urgency Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM55 | PAN PAN PAN<br>*NOTE– N response attribute.* | Y | Indication of an urgent situation. |
| DM56 | MAYDAY MAYDAY MAYDAY<br>*NOTE– N response attribute.* | Y | Indication of an emergency situation. |
| DM57 | (*remaining fuel*) OF FUEL REMAINING AND (*remaining souls*) SOULS ON BOARD<br>*NOTE– N response attribute.* | Y | Report indicating fuel remaining (time) and number of persons on board. |
| DM58 | CANCEL EMERGENCY<br>*NOTE– N response attribute.* | Y | Indication that the emergency situation is canceled. |

***TBL 14–2–16***

**Standard Response Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM0 | UNABLE | N | Indication that the message cannot be complied with. |
| UM1 | STANDBY | N | Indication that the message will be responded to shortly. |
| UM3 | ROGER | N | Indication that the message is received. |

*TBL 14–2–17*

**Standard Response Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM0 | WILCO | N | Indication that the instruction is understood and will be complied with. |
| DM1 | UNABLE | N | Indication that the instruction cannot be complied with. |
| DM2 | STANDBY | N | Indication that the message will be responded to shortly. |
| DM3 | ROGER<br>*NOTE– ROGER is the only correct response to an uplink free text message.* | N | Indication that the message is received. |

*TBL 14–2–18*

**Supplemental Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM166 | DUE TO TRAFFIC | N | Indication that the associated message is issued due to the specified reason. |
| UM167 | DUE TO AIRSPACE RESTRICTION | N | Indication that the associated message is issued due to the specified reason. |

*TBL 14–2–19*

**Supplemental Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM65 | DUE TO WEATHER | N | Indication that the associated message is issued due to specified reason. |
| DM66 | DUE TO AIRCRAFT PERFORMANCE | N | Indication that the associated message is issued due to specified reason. |

***TBL 14–2–20***

**Free Text Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM169 | (*free text*) | R | A message or part of a message that does not conform to any standard message element in the PANSATM (Doc 4444). |
| UM169 | (*free text*) CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION | R | See Note |
| UM169 | (*free text*) ”[facility designation]” LOCAL ALTIMETER (for Altimeter reporting Station) | R | See Note |
| UM169 | (*free text*) ”[facility designation] LOCAL ALTIMETER MORE THAN ONE HOUR” OLD | R | See Note |
| UM169 | (*free text*) DUE TO WEATHER | R | See Note |
| UM169 | (*free text*) REST OF ROUTE UNCHANGED | R | See Note |
| UM169 | (*free text*) TRAFFIC FLOW MANAGEMENT REROUTE | R | See Note |
| UM169 | (*free text*) DUE TO SPACING | R | See Note |
| UM169 | (*free text*) ATC HAS YOUR REQUEST | R | See Note |
| UM169 | (*free text*) ATC ADVISORY | R | See Note |

***NOTE–***
*These are FAA scripted free text messages with no GOLD equivalent.*

***TBL 14–2–21***

**Free Text Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM68 | (*free text*)<br>*NOTE 1. – Urgency or Distress (M alert attribute)*<br>*NOTE 2. – Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.* | Y | N/A |

*TBL 14–2–22*

**System Management Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM159 | ERROR (*error information*) | N | System-generated notification of an error. |
| UM160 | NEXT DATA AUTHORITY (*ICAO facility designation*)<br>*NOTE– The facility designation is required.* | N | System-generated notification of the next data authority or the cancellation thereof. |

*TBL 14–2–23*

**System Management Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM62 | ERROR (*error information*) | N | System-generated notification of an error. |
| DM63 | NOT CURRENT DATA AUTHORITY | N | System-generated rejection of any CPDLC message sent from a ground facility that is not the current data authority. |
| DM64 | (*ICAO facility designation*)<br>*NOTE– Use by FANS 1/A aircraft in B1 environments.* | N | System-generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported. |

# Section 3. Advanced Technologies and Oceanic Procedures (ATOP) – Oceanic Controller Pilot Data Link Communications (CPDLC)

***NOTE–***
*Controller Pilot Data Link Communications (CPDLC) messages in use in Oceanic operations are contained in TBL 14–3–1 through TBL 14–3–26.*

## 14–3–1. MEANS OF COMMUNICATION

**a.** When CPDLC is available and CPDLC connected aircraft are operating outside of VHF coverage, CPDLC must be used as the primary means of communication.

**b.** Voice communications may be utilized for CPDLC aircraft when it will provide an operational advantage and/or when workload or equipment capabilities demand.

**c.** When CPDLC is being utilized, a voice backup must exist (e.g., HF, SATCOM, Third Party).

**d.** When a pilot communicates via CPDLC, the response should be via CPDLC.

**e.** To the extent possible, the CPDLC message set should be used in lieu of free text messages.

***NOTE–***
**1.** *The CPDLC message sets are contained in TBL 14–3–1 through TBL 14–3–26.*

**2.** *The use of the CPDLC message set ensures the proper "closure" of CPDLC exchanges.*

## 14–3–2. TRANSFER OF COMMUNICATIONS TO THE NEXT FACILITY

**a.** When the receiving facility is capable of CPDLC communications, the data link transfer is automatic and is accomplished within facility adapted parameters.

**b.** When a receiving facility is not CPDLC capable, the transfer of communications must be made in accordance with local directives and Letters of Agreement (LOAs).

## 14–3–3. ABNORMAL CONDITIONS

**a.** If any portion of the automated transfer fails, the controller should attempt to initiate the transfer manually. If unable to complete the data link transfer, the controller should advise the pilot to log on to the next facility and send an End Service (EOS) message.

**b.** If CPDLC fails, voice communications must be utilized until CPDLC connections can be reestablished.

**c.** If the CPDLC connection is lost on a specific aircraft, the controller should send a connection request message (CR1) or advise the pilot via backup communications to log on again.

**d.** If CPDLC service is to be canceled, the controller must advise the pilot as early as possible to facilitate a smooth transition to voice communications. Workload permitting, the controller should also advise the pilot of the reason for the termination of data link.

**e.** When there is uncertainty that a clearance was delivered to an aircraft via CPDLC, the controller must continue to protect the airspace associated with the clearance until an appropriate operational response is received from the flight crew. If an expected operational response to a clearance is not received, the controller will initiate appropriate action to ensure that the clearance was received by the flight crew. On initial voice contact with aircraft preface the message with the following:

***PHRASEOLOGY–***
*(Call Sign) CPDLC Failure, (message).*

***TBL 14–3–1***
**Response Attribute of CPDLC Message Element**

| Response Attribute | Description |
|---|---|
| | **For Uplink Message** |
| W/U | Response required.<br>Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR.<br>*NOTE– WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.*<br>*FANS 1/A.— WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.* |
| A/N | Response required.<br>Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR<br>*NOTE– AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message. FANS 1/A.—AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.* |
| R | Response required.<br>Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR.<br>*NOTE– ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.*<br>*FANS 1/A.—ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS 1/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an "R" response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction.* |
| Y | Response required.<br>Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required). |
| N | No response required unless logical acknowledgement is required.<br>Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR.<br>*FANS 1/A.— "N" is defined as "no response is required," but not used. Under some circumstances, an ERROR message will also close an uplink message.* |
| NE | [Not defined in Doc 4444]<br>*FANS 1/A.—The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute.* |

| Response Attribute | Description |
|---|---|
| **For Downlink Message** | |
| Y | Response required. Yes<br>Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required). |
| N | Response required. No, unless logical acknowledgement required.<br>Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR<br>*FANS 1/A.—Aircraft do not have the capability to receive technical responses to downlink message elements with an "N" response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS 1/A aircraft and Doc 4444. As an example, most emergency messages have an "N" response attribute for FANS 1/A whereas Doc 4444 defines a "Y" response attribute for them. As a consequence, for FANS 1/A aircraft, ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received.* |

***TBL 14–3–2***

**Route Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM74 | PROCEED DIRECT TO *(position)* | W/U | Instruction to proceed directly to the specified position. |
| UM75 | WHEN ABLE PROCEED DIRECT TO (*position*)<br>*NOTE– This message element is equivalent to SUPU–5 plus RTEU–2 in Doc 4444.* | W/U | Instruction to proceed directly to the specified position. |
| UM76 | AT (*time*) PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed, at the specified time, directly to the specified position. |
| UM77 | AT (*position*) PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed, at the specified position, directly to the next specified position. |
| UM78 | AT (*altitude*) PROCEED DIRECT TO (*position*) | W/U | Instruction to proceed upon reaching the specified altitude, directly to the specified position. |
| UM79 | CLEARED TO *(position)* VIA *(route clearance)* | W/U | Instruction to proceed to the specified position via the specified route. |
| UM80 | CLEARED *(route clearance)* | W/U | Instruction to proceed via the specified route. |
| UM83 | AT *(position)* CLEARED *(route clearance)* | W/U | Instruction to proceed from the specified position via the specified route. |
| UM85 | EXPECT (*route clearance*) | R | Notification that a clearance to fly on the specified route may be issued. |
| UM86 | AT (*position*) EXPECT (*route clearance*) | R | Notification that a clearance to fly on the specified route from the specified position may be issued. |
| UM87 | EXPECT DIRECT TO (*position*) | R | Notification that a clearance to fly directly to the specified position may be issued. |
| UM88 | AT (*position*) EXPECT DIRECT TO (*position*) | R | Notification that a clearance to fly directly from the first specified position to the next specified position may be issued. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM89 | AT (*time*) EXPECT DIRECT TO (*position*) | R | Notification that a clearance to fly directly to the specified position commencing at the specified time may be issued. |
| UM90 | AT (*altitude*) EXPECT DIRECT TO (*position*) | R | Notification that a clearance to fly directly to the specified position commencing when the specified altitude is reached may be issued. |
| UM93 | EXPECT FURTHER CLEARANCE AT (*time*) | R | Notification that an onwards clearance may be issued at the specified time. |
| UM99 | EXPECT (*procedure name*)<br>*NOTE– Used when a published procedure is designated.* | R | Notification that a clearance may be issued for the aircraft to fly the specified procedure or clearance name. |
| UM137 | CONFIRM ASSIGNED ROUTE<br>*NOTE– NE response attribute.* | NE | Request to confirm the assigned route. |
| UM147 | REQUEST POSITION REPORT | NE | Request to make a position report. |

***TBL 14–3–3***

**Route Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM22 | REQUEST DIRECT TO *(position)* | Y | Request for a direct clearance to the specified position. |
| DM23 | REQUEST (*procedure name*) | Y | Request for the specified procedure or clearance name. |
| DM24 | REQUEST (*route clearance*) | Y | Request for the specified route. |
| DM25 | REQUEST CLEARANCE | Y | Request for the specified clearance. |
| DM26 | REQUEST WEATHER DEVIATION TO (*position*) VIA (*route clearance*) | Y | Request for a weather deviation to the specified position via the specified route. |
| DM40 | ASSIGNED ROUTE (*route clearance*) | N | Confirmation that the assigned route is the specified route. |
| DM48 | POSITION REPORT (*position report*) | N | Position report. |
| DM51 | WHEN CAN WE EXPECT BACK ON ROUTE | Y | Request for the time or position that can be expected to rejoin the cleared route. |
| DM70 | REQUEST HEADING (*degrees*) | Y | Request for the specified heading. |
| DM71 | REQUEST GROUND TRACK (*degrees*) | Y | Request for the specified ground track. |

*TBL 14–3–4*

**Lateral Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM64 | OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction. |
| UM65 | AT (*position*) OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified position. |
| UM66 | AT (*time*) OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified time. |
| UM67 | PROCEED BACK ON ROUTE | W/U | Instruction to rejoin the cleared route. |
| UM68 | REJOIN ROUTE BY (*position*) | W/U | Instruction to rejoin the cleared route before passing the specified position. |
| UM69 | REJOIN ROUTE BY (*time*) | W/U | Instruction to rejoin the cleared route before the specified time. |
| UM70 | EXPECT BACK ON ROUTE BY (*position*) | W/U | Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before passing the specified position. |
| UM71 | EXPECT BACK ON ROUTE BY (*time*) | W/U | Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before the specified time. |
| UM72 | RESUME OWN NAVIGATION | W/U | Instruction to resume own navigation following a period of tracking or heading clearances. May be used in conjunction with an instruction on how or where to rejoin the cleared route. |
| UM82 | CLEARED TO DEVIATE UP TO (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction allowing deviation up to the specified distance(s) from the cleared route in the specified direction(s). |
| UM98 | IMMEDIATELY TURN (*direction*) HEADING (*degrees*)<br>*NOTE– This message element is equivalent to EMGU–2 plus LATU–11 in Doc 4444.* | W/U | Instruction to turn left or right as specified on to the specified heading. |
| UM127 | REPORT BACK ON ROUTE<br>*NOTE– R response attribute.* | W/U | Instruction to report when the aircraft is back on the cleared route. |
| UM130 | REPORT PASSING (*position*)<br>*NOTE– R response attribute.* | W/U | Instruction to report upon passing the specified position. |
| UM132 | CONFIRM POSITION | NE | Instruction to report the present position. |
| UM138 | CONFIRM TIME OVER REPORTED WAYPOINT | NE | Instruction to confirm the previously reported time over the last reported waypoint. |
| UM139 | CONFIRM REPORTED WAYPOINT | NE | Instruction to confirm the identity of the previously reported waypoint. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM140 | CONFIRM NEXT WAYPOINT | NE | Instruction to confirm the identity of the next waypoint. |
| UM141 | CONFIRM NEXT WAYPOINT ETA | NE | Instruction to confirm the previously reported estimated time at the next waypoint. |
| UM142 | CONFIRM ENSUING WAYPOINT | NE | Instruction to confirm the identity of the next plus one waypoint. |
| UM145 | CONFIRM HEADING | NE | Instruction to report the present heading. |
| UM146 | REPORT GROUND TRACK | NE | Instruction to report the present ground track. |
| UM152 | WHEN CAN YOU ACCEPT (*specified distance*) (*direction*) OFFSET | NE | Instruction to report the earliest time when the specified offset track can be accepted. |

***TBL 14–3–5***

**Lateral Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM15 | REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request for a parallel track from the cleared route at a displacement of the specified distance in the specified direction. |
| DM16 | AT (*position*) REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified position. |
| DM17 | AT (*time*) REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified time. |
| DM27 | REQUEST WEATHER DEVIATION UP TO (*specified distance*) (*direction*) OF ROUTE | Y | Request for a weather deviation up to the specified distance(s) off track in the specified direction(s). |
| DM31 | PASSING (*position*) | N | Report indicating passing the specified position. |
| DM33 | PRESENT POSITION (*position*) | N | Notification of the present position. |
| DM35 | PRESENT HEADING (*degrees*) | N | Notification of the present heading in degrees. |
| DM36 | PRESENT GROUND TRACK (*degrees*) | N | Notification of the present ground track in degrees. |
| DM41 | BACK ON ROUTE | N | Report indicating that the cleared route has been rejoined. |
| DM42 | NEXT WAYPOINT (*position*) | N | The next waypoint is the specified position. |
| DM43 | NEXT WAYPOINT ETA (*time*) | N | The ETA at the next waypoint is as specified. |
| DM44 | ENSUING WAYPOINT (*position*) | N | The next plus one waypoint is the specified position. |
| DM45 | REPORTED WAYPOINT (*position*) | N | Clarification of previously reported waypoint passage. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM46 | REPORTED WAYPOINT (*time*) | N | Clarification of time over previously reported waypoint. |
| DM59 | DIVERTING TO *(position)* VIA *(route clearance)*<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N | Report indicating diverting to the specified position via the specified route, which may be sent without any previous coordination done with ATC. |
| DM60 | OFFSETTING *(distance offset) (direction)* OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N | Report indicating that the aircraft is offsetting to a parallel track at the specified distance in the specified direction off from the cleared route. |
| DM80 | DEVIATING *(deviation offset) (direction)* OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N | Report indicating deviating specified distance or degrees in the specified direction from the cleared route. |
| DM67 | WE CAN ACCEPT (*direction*) (*distance offset*) AT (*time*) | N | We can accept a parallel track offset the specified distance in the specified direction at the specified time. |
| DM67 | WE CANNOT ACCEPT (*direction*) (*distance offset*) | N | We cannot accept a parallel track offset the specified distance in the specified direction. |
| DM67 | WE CANNOT ACCEPT (*altitude*) | N | We cannot accept the specified altitude. |

***TBL 14–3–6***

**Altitude Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM6 | EXPECT *(altitude)* | R | Notification that an altitude change instruction should be expected. |
| UM7 | EXPECT CLIMB AT *(time)* | R | Notification that an instruction may be expected for the aircraft to commence climb at the specified time. |
| UM8 | EXPECT CLIMB AT (*position*) | R | Notification that an instruction may be expected for the aircraft to commence climb at the specified position. |
| UM9 | EXPECT DESCENT AT (*time*) | R | Notification that an instruction may be expected for the aircraft to commence descent at the specified time. |
| UM10 | EXPECT DESCENT AT (*position*) | R | Notification that an instruction may be expected for the aircraft to commence descent at the specified position. |
| UM11 | EXPECT CRUISE CLIMB AT *(time)* | R | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM12 | EXPECT CRUISE CLIMB AT (*position*) | R | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position. |
| UM13 | AT (*time*) EXPECT CLIMB TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence climb at the specified time to the specified altitude. |
| UM14 | AT (*position*) EXPECT CLIMB TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence climb at the specified position to the specified altitude. |
| UM15 | AT (*time*) EXPECT DESCENT TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence descent at the specified time to the specified altitude. |
| UM16 | AT (*position*) EXPECT DESCENT TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence descent at the specified position to the specified altitude. |
| UM17 | AT (*time*) EXPECT CRUISE CLIMB TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time to the specified altitude. |
| UM18 | AT (*position*) EXPECT CRUISE CLIMB TO (*altitude*) | R | Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position to the specified altitude. |
| UM19 | MAINTAIN *(altitude)* | W/U | Instruction to maintain the specified altitude. |
| UM20 | CLIMB TO AND MAINTAIN *(altitude)* | W/U | Instruction that a climb to the specified altitude is to commence and once reached is to be maintained. |
| UM21 | AT (*time*) CLIMB TO AND MAINTAIN (*altitude*) | W/U | Instruction that at the specified time a climb to the specified altitude is to commence and once reached is to be maintained.<br>*NOTE– This message element would be preceded with uM19 MAINTAIN (altitude) to prevent the premature execution of the instruction.* |
| UM22 | AT (*position*) CLIMB TO AND MAINTAIN (*altitude*) | W/U | Instruction that at the specified position a climb to the specified altitude is to commence and once reached is to be maintained.<br>*NOTE– This message element would be preceded with uM19 MAINTAIN (altitude) to prevent the premature execution of the instruction.* |
| UM23 | DESCEND TO AND MAINTAIN *(altitude)* | W/U | Instruction that a descent to the specified altitude is to commence and once reached is to be maintained. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM24 | AT (*time*) DESCEND TO AND MAINTAIN (*altitude*) | W/U | Instruction that at the specified time a descent to the specified altitude is to commence and once reached is to be maintained. |
| UM25 | AT (*position*) DESCEND TO AND MAINTAIN (*altitude*) | W/U | Instruction that at the specified position a descent to the specified altitude is to commence and once reached is to be maintained. |
| UM26 | CLIMB TO REACH (*altitude*) BY (*time*) | W/U | Instruction that a climb is to be completed such that the specified altitude is reached before the specified time. |
| UM27 | CLIMB TO REACH (*altitude*) BY (*position*) | W/U | Instruction that a climb is to be completed such that the specified altitude is reached before passing the specified position. |
| UM28 | DESCEND TO REACH (*altitude*) BY (*time*) | W/U | Instruction that a descent is to be completed such that the specified altitude is reached before the specified time. |
| UM29 | DESCEND TO REACH (*altitude*) BY (*position*) | W/U | Instruction that a descent is to be completed such that the specified altitude is reached before passing the specified position. |
| UM30 | MAINTAIN BLOCK (*altitude*) TO (*altitude*) | W/U | Instruction to maintain the specified vertical range. |
| UM31 | CLIMB TO AND MAINTAIN BLOCK | W/U | Instruction that a climb to the specified vertical range is to commence and once reached is to be maintained. |
| UM32 | DESCEND TO AND MAINTAIN BLOCK (*altitude*) TO (*altitude*) | W/U | Instruction that a descent to the specified vertical range is to commence and once reached is to be maintained. |
| UM33 | CRUISE (*altitude*) | | Instruction that authorizes a pilot to conduct flight at any altitude from the minimum altitude up to and including the altitude specified in the clearance. Further, it is approval for the pilot to proceed to and make an approach at the destination airport. |
| UM34 | CRUISE CLIMB TO (*altitude*) | W/U | A cruise climb is to commence and continue until the specified altitude is reached. |
| UM35 | CRUISE CLIMB ABOVE (*altitude*) | W/U | A cruise climb can commence once above the specified altitude. |
| UM36 | EXPEDITE CLIMB TO (*altitude*) | W/U | Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM37 | EXPEDITE DESCENT TO *(altitude)* | W/U | Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM38 | IMMEDIATELY CLIMB TO (*altitude*) | W/U | Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM39 | IMMEDIATELY DESCEND TO (*altitude*) | W/U | Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained. |
| UM40 | IMMEDIATELY STOP CLIMB AT (*altitude*) | W/U | Urgent instruction to immediately stop a climb once the specified altitude is reached. |
| UM41 | IMMEDIATELY STOP DESCENT AT (*altitude*) | W/U | Urgent instruction to immediately stop a descent once the specified altitude is reached. |
| UM128 | REPORT LEAVING (*altitude*)<br>*NOTE– R response attribute.* | W/U | Instruction to report upon leaving the specified altitude. |
| UM129 | REPORT LEVEL (*altitude*)<br>*NOTE– R response attribute.* | W/U | Instruction to report upon maintaining the specified altitude. |
| UM133 | CONFIRM ALTITUDE | NE | Instruction to report the present altitude. |
| UM135 | CONFIRM ASSIGNED ALTITUDE<br>*NOTE– NE response attribute.* | NE | Request to confirm the assigned altitude. |
| UM148 | WHEN CAN YOU ACCEPT (*altitude*)<br>*NOTE– NE response attribute.* | NE | Request for the earliest time or position when the specified altitude can be accepted. |
| UM149 | CAN YOU ACCEPT (*altitude*) AT (*position*) | A/N | Request to indicate whether or not the specified altitude can be accepted at the specified position. |
| UM150 | CAN YOU ACCEPT (*altitude*) AT (*time*) | A/N | Request to indicate whether or not the specified altitude can be accepted at the specified time. |
| UM171 | CLIMB AT (*vertical rate*) MINIMUM | W/U | Instruction to climb at the specified rate or greater. |
| UM172 | CLIMB AT (*vertical rate*) MAXIMUM | W/U | Instruction to climb at the specified rate or less. |
| UM173 | DESCEND AT (*vertical rate*) MINIMUM | W/U | Instruction to descend at the specified rate or greater. |
| UM174 | DESCEND AT (*vertical rate*) MAXIMUM | W/U | Instruction to descend at the specified rate or less. |
| UM175 | REPORT REACHING (*altitude*) | R | Instruction to report when the aircraft has reached the specified altitude.<br>*NOTE– To be interpreted as "Report reaching an assigned altitude."* |
| UM177 | AT PILOTS DISCRETION | N | Used in conjunction with a clearance or instruction to indicate that the pilot may execute when prepared to do so. |
| UM180 | REACHING BLOCK (*altitude*) TO (*altitude*)<br>*NOTE– R response attribute.* | W/U | Instruction to report upon reaching the specified vertical range. |

***TBL 14–3–7***

**Altitude Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM6 | REQUEST *(altitude)* | Y | Request to fly at the specified altitude. |
| DM7 | REQUEST BLOCK (*altitude*) TO (*altitude*) | Y | Request to fly at the specified vertical range. |
| DM8 | REQUEST CRUISE CLIMB TO (*altitude*) | Y | Request to cruise climb to the specified altitude.<br>*NOTE– Due to different interpretations between the various ATS units, this element should be avoided.* |
| DM9 | REQUEST CLIMB TO *(altitude)* | Y | Request for a climb to the specified altitude or vertical range. |
| DM10 | REQUEST DESCENT TO *(altitude)* | Y | Request for a descent to the specified altitude or vertical range. |
| DM11 | AT (*position*) REQUEST CLIMB TO (*altitude*) | Y | Request for a climb/descent to the specified altitude to commence at the specified position. |
| DM12 | AT (*position*) REQUEST DESCENT TO (*altitude*) | Y | Request for a climb/descent to the specified altitude to commence at the specified position. |
| DM13 | AT TIME (*time*) REQUEST CLIMB TO (*altitude*) | Y | Request for a climb/descent to the specified altitude to commence at the specified time. |
| DM14 | AT TIME (*time*) REQUEST DESCENT TO (*altitude*) | Y | Request for a climb/descent to the specified altitude to commence at the specified time. |
| DM28 | LEAVING (*altitude*) | N | Notification of leaving the specified altitude. |
| DM29 | CLIMBING TO (*altitude*) | N | Report indicating climbing to the specified altitude. |
| DM30 | DESCENDING TO (*altitude*)<br>*NOTE– N alert attribute.* | N | Notification of descending to the specified altitude. |
| DM32 | PRESENT ALTITUDE (*altitude*) | N | Notification of the present altitude. |
| DM37 | LEVEL (*altitude*) | N | Report indicating that the specified altitude is being maintained. |
| DM38 | ASSIGNED ALTITUDE *(altitude)* | N | Confirmation that the assigned altitude is the specified altitude or vertical range. |
| DM52 | WHEN CAN WE EXPECT LOWER ALTITUDE | Y | Request for the earliest time or position that a descent can be expected. |
| DM53 | WHEN CAN WE EXPECT HIGHER ALTITUDE | Y | Request for the earliest time or position that a climb can be expected. |
| DM54 | WHEN CAN WE EXPECT CRUISE CLIMB TO (*altitude*) | Y | Request for the earliest time at which a clearance to cruise climb to the specified altitude can be expected. |
| DM61 | DESCENDING TO *(altitude)*<br>*NOTE– Urgent alert attribute.* | N | Report indicating descending to the specified altitude. |
| DM67 | 'WE CAN ACCEPT (*altitude*) AT TIME (*time*)' | N | We can accept the specified altitude at the specified time. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM67 | 'WE CANNOT ACCEPT (*altitude*)' | N | Indication that the specified altitude cannot be accepted. |
| DM67 | 'WHEN CAN WE EXPECT CLIMB TO (*altitude*)' | N | Request for the earliest time at which a clearance to climb to the specified altitude can be expected. |
| DM67 | 'WHEN CAN WE EXPECT DESCENT TO (*altitude*)' | N | Request for the earliest time at which a clearance to descend to the specified altitude can be expected. |
| DM72 | REACHING (*altitude*) | N | Notification that the aircraft has reached the specified altitude. |
| DM75 | AT PILOTS DISCRETION | N | Used in conjunction with another message to indicate that the pilot wishes to execute the request when the pilot is prepared to do so. |
| DM76 | REACHING BLOCK (*altitude*) TO (*altitude*) | N | Report indicating reaching the specified vertical range. |
| DM77 | ASSIGNED BLOCK (*altitude*) TO (*altitude*)<br>*NOTE– Used for a vertical range.* | N | Confirmation that the assigned vertical range is the specified vertical range. |

***TBL 14–3–8***

**Crossing Constraint Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM42 | EXPECT TO CROSS (*position*) AT (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at the specified altitude. |
| UM43 | EXPECT TO CROSS (*position*) AT OR ABOVE (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at or above the specified altitude. |
| UM44 | EXPECT TO CROSS (*position*) AT OR BELOW (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at or below the specified altitude. |
| UM45 | EXPECT TO CROSS (*position*) AT AND MAINTAIN (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at the specified altitude which is to be maintained subsequently. |
| UM46 | CROSS (*position*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM47 | CROSS (*position*) AT OR ABOVE (*altitude*) | W/U | Instruction that the specified position is to be crossed at or above the specified altitude. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM48 | CROSS (*position*) AT OR BELOW (*altitude*) | W/U | Instruction that the specified position is to be crossed at or below the specified altitude. |
| UM49 | CROSS (*position*) AT AND MAINTAIN (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM50 | CROSS (*position*) BETWEEN (*altitude*) AND (*altitude*) | W/U | Instruction that the specified position is to be crossed within the specified vertical range. |
| UM51 | CROSS (*position*) AT (*time*) | W/U | Instruction that the specified position is to be crossed at the specified time. |
| UM52 | CROSS (*position*) AT OR BEFORE (*time*) | W/U | Instruction that the specified position is to be crossed before the specified time. |
| UM53 | CROSS (*position*) AT OR AFTER (*time*) | W/U | Instruction that the specified position is to be crossed after the specified time. |
| UM54 | CROSS (*position*) BETWEEN (*time*) AND (*time*) | W/U | Instruction that the specified position is to be crossed between the specified times. |
| UM55 | CROSS (*position*) AT (*speed*) | W/U | Instruction that the specified position is to be crossed at the specified speed. |
| UM56 | CROSS (*position*) AT OR LESS THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or less than the specified speed. |
| UM57 | CROSS (*position*) AT OR GREATER THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or greater than the specified speed. |
| UM58 | CROSS (*position*) AT (*time*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified time and at the specified altitude. |
| UM59 | CROSS (*position*) AT OR BEFORE (*time*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed before the specified time and at the specified altitude. |
| UM60 | CROSS (*position*) AT OR AFTER (*time*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed after the specified time and at the specified altitude. |
| UM61 | CROSS *(position)* AT AND MAINTAIN *(altitude)* AT *(speed)*<br>*NOTE 1. – A vertical range cannot be provided.*<br>*NOTE 2. – This message element is equivalent to CSTU–14 plus LVLU–5 in Doc 4444.* | W/U | Instruction that the specified position is to be crossed at the altitude specified, and at the specified speed. |
| UM62 | AT (*time*) CROSS (*position*) AT AND MAINTAIN (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified time and at the specified altitude. |
| UM63 | AT (*time*) CROSS (*position*) AT AND MAINTAIN (*altitude*) AT (*speed*) | W/U | Instruction that the specified position is to be crossed at the specified time at the specified altitude, and at the specified speed. |

*TBL 14–3–9*

**Speed Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM100 | AT (*time*) EXPECT (*speed*) | R | Notification that a speed instruction may be issued to take effect at the specified time. |
| UM101 | AT (*position*) EXPECT (*speed*) | R | Notification that a speed instruction may be issued to take effect at the specified position. |
| UM102 | AT (*altitude*) EXPECT (*speed*) | R | Notification that a speed instruction may be issued to take effect at the specified altitude. |
| UM103 | AT (*time*) EXPECT (*speed*) TO (*speed*) | R | Notification that a speed range instruction may be issued to be effective at the specified time. |
| UM104 | AT (*position*) EXPECT (*speed*) TO (*speed*) | R | Notification that a speed range instruction may be issued to be effective at the specified position. |
| UM105 | AT (*altitude*) EXPECT (*speed*) TO (*speed*) | R | Notification that a speed range instruction may be issued to be effective at the specified altitude. |
| UM106 | MAINTAIN (*speed*) | W/U | Instruction to maintain the specified speed. |
| UM107 | MAINTAIN PRESENT SPEED | W/U | Instruction to maintain the present speed. |
| UM108 | MAINTAIN (*speed*) OR GREATER | W/U | Instruction to maintain the specified speed or greater. |
| UM109 | MAINTAIN (*speed*) OR LESS | W/U | Instruction to maintain the specified speed or less. |
| UM110 | MAINTAIN (*speed*) TO (*speed*) | W/U | Instruction to maintain the specified speed range. |
| UM111 | INCREASE SPEED TO (*speed*) | W/U | Instruction that the present speed is to be increased to the specified speed and maintained until further advised. |
| UM112 | INCREASE SPEED TO (*speed*) OR GREATER | W/U | Instruction that the present speed is to be increased to the specified speed or greater, and maintained at or above the specified speed until further advised. |
| UM113 | REDUCE SPEED TO (*speed*) | W/U | Instruction that the present speed is to be reduced to the specified speed and maintained until further advised. |
| UM114 | REDUCE SPEED TO (*speed*) OR LESS | W/U | Instruction that the present speed is to be reduced to the specified speed or less, and maintained at or below the specified speed until further advised. |
| UM115 | DO NOT EXCEED (*speed*) | W/U | The specified speed is not to be exceeded. |
| UM116 | RESUME NORMAL SPEED | W/U | Instruction to resume a normal speed. The aircraft no longer needs to comply with a previously issued speed restriction. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM134 | CONFIRM SPEED<br>*NOTE– NE response attribute.* | NE | Request to report the speed defined by the speed type(s). |
| UM136 | CONFIRM ASSIGNED SPEED<br>*NOTE– NE response attribute.* | NE | Request to confirm the assigned speed. |
| UM151 | WHEN CAN YOU ACCEPT (*speed*)<br>*NOTE– NE response attribute.* | NE | Request for the earliest time or position when the specified speed can be accepted. |

***TBL 14–3–10***

**Speed Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM18 | REQUEST (*speed*) | Y | Request for the specified speed. |
| DM19 | REQUEST (*speed*) TO (*speed*) | Y | Request to fly within the specified speed range. |
| DM34 | PRESENT SPEED (*speed*) | N | Report indicating the speed defined by the specified speed types is the specified speed. |
| DM39 | ASSIGNED SPEED (*speed*) | N | Confirmation that the assigned speed is the specified speed. |
| DM49 | WHEN CAN WE EXPECT (*speed*) | Y | Request for the earliest time or position that the specified speed can be expected. |
| DM50 | WHEN CAN WE EXPECT (*speed*) TO (*speed*) | Y | Request for the earliest time at which a clearance to a speed within the specified range can be expected. |
| DM67 | ‘WE CAN ACCEPT (*speed*) AT TIME (*time*)’ | N | Indication that the specified speed can be accepted at the specified time. |
| DM67 | ‘WE CANNOT ACCEPT (*speed*)’ | N | Indication that the specified speed cannot be accepted. |

*TBL 14–3–11*

**Air Traffic Advisory Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM123 | SQUAWK (*beacon code*) | W/U | Instruction to select the specified SSR code. |
| UM124 | STOP SQUAWK | W/U | Instruction to disable SSR transponder responses. |
| UM125 | SQUAWK ALTITUDE | W/U | Instruction to include altitude information in the SSR transponder responses. |
| UM126 | STOP ALTITUDE SQUAWK | W/U | Instruction to stop including altitude information in the SSR transponder responses. |
| UM144 | CONFIRM SQUAWK<br>*NOTE– NE response attribute.* | NE | Request to confirm the selected SSR code. |
| UM153 | ALTIMETER *(altimeter)*<br>*NOTE– The facility designation and the time of measurement cannot be provided.* | R | Advisory providing the specified altimeter setting for the specified facility. |
| UM154 | RADAR SERVICES TERMINATED | R | Advisory that the ATS surveillance service is terminated. |
| UM155 | RADAR CONTACT (*position*)<br>*NOTE– The provision of the position is required.* | R | Advisory that ATS surveillance service has been established. A position may be specified position. |
| UM156 | RADAR CONTACT LOST | R | Advisory that ATS surveillance contact has been lost. |
| UM158 | ATIS (*ATIS code*)<br>*NOTE– The airport is not provided.* | R | ATS advisory that the current ATIS *code* is as specified. |
| UM163 | (*ICAO facility designation*)<br>(tp4Table) | NE | Notification to the pilot of an ATSU identifier. |
| UM168 | DISREGARD | N/E | The indicated communication should be ignored.<br>The previously sent uplink CPDLC message shall be ignored. DISREGARD should not refer to a clearance or instruction. If DISREGARD is used, another element shall be added to clarify which message is to be disregarded. |
| UM179 | SQUAWK IDENT | W/U | Instruction that the ‘ident’ function on the SSR transponder is to be actuated. |
| UM182 | CONFIRM ATIS CODE | NE | Instruction to report the identification code of the last ATIS received. |

*TBL 14–3–12*

**Air Traffic Advisory Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM47 | SQUAWKING (*code*) | N | Report indicating that the aircraft is squawking the specified SSR code. |
| DM79 | ATIS (*ATIS code*) | N | The code of the latest ATIS received is as specified. |

*TBL 14–3–13*

**Voice Communications Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM117 | CONTACT *(ICAO unit name) (frequency)* | W/U | Instruction to establish voice contact with the specified ATS unit on the specified frequency. |
| UM118 | AT (*position*) CONTACT (*ICAO unit name*) (*frequency*) | W/U | Instruction at the specified position to establish voice contact with the specified ATS unit on the specified frequency. |
| UM119 | AT (*time*) CONTACT (*ICAO unit name*) (*frequency*) | W/U | Instruction at the specified time to establish voice contact with the specified ATS unit on the specified frequency. |
| UM120 | MONITOR *(ICAO unit name) (frequency)* | W/U | Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency. |
| UM121 | AT (*position*) MONITOR (*ICAO unit name*) (*frequency*) | W/U | Instruction at the specified position to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency. |
| UM122 | AT (*time*) MONITOR (*ICAO unit name*) (*frequency*) | W/U | Instruction at the specified time to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency. |
| UM157 | CHECK STUCK MICRO-PHONE (*frequency*)<br>*NOTE– R response attribute.* | R | Instruction to check the microphone due to detection of a continuous transmission on the specified frequency. |

*TBL 14−3−14*

**Voice Communications Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM20 | REQUEST VOICE CONTACT<br>*NOTE− Used when a frequency is not required.* | Y | Request for voice contact on the specified frequency. |
| DM21 | REQUEST VOICE CONTACT (*frequency*)<br>*NOTE− Used when a frequency is required.* | Y | Request for voice contact on the specified frequency. |

*TBL 14−3−15*

**Emergency/Urgency Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM131 | REPORT REMAINING FUEL AND SOULS ON BOARD<br>*NOTE− NE response attribute.* | Y | Request to provide the fuel remaining (time) and the number of persons on board. |
| | Used in combination with LVLU−6 and LVLU−9, which is implemented in FANS 1/A as: | N | Instruction to immediately comply with the associated instruction to avoid imminent situation. |
| UM38 | IMMEDIATELY CLIMB TO (*altitude*) | | |
| UM39 | IMMEDIATELY DESCEND TO (*altitude*) | | |

*TBL 14−3−16*

**Emergency/Urgency Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM55 | PAN PAN PAN<br>*NOTE− N response attribute.* | N | Indication of an urgent situation. |
| DM56 | MAYDAY MAYDAY MAYDAY<br>*NOTE− N response attribute.* | N | Indication of an emergency situation. |
| DM57 | *(remaining fuel)* OF FUEL REMAINING AND *(remaining souls)* SOULS ON BOARD<br>*NOTE− N response attribute.* | N | Report indicating fuel remaining (time) and number of persons on board. |
| DM58 | CANCEL EMERGENCY<br>*NOTE− N response attribute.* | N | Indication that the emergency situation is canceled. |

*TBL 14–3–17*

**Standard Response Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM0 | UNABLE | N | Indication that the message cannot be complied with. |
| UM1 | STANDBY | N | Indication that the message will be responded to shortly. |
| UM2 | REQUEST DEFERRED | NE | Indication that a long-term delay in response can be expected. |
| UM3 | ROGER | N | Indication that the message is received. |
| UM4 | AFFIRM | NE | Indication that ATC is responding positively to the message. |
| UM5 | NEGATIVE | NE | Indication that ATC is responding negatively to the message. |
| UM143 | CONFIRM REQUEST | N | Request to confirm the referenced request since the initial request was not understood. The request should be clarified and resubmitted. |

*TBL 14–3–18*

**Standard Response Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM0 | WILCO | N | Indication that the instruction is understood and will be complied with. |
| DM1 | UNABLE | N | Indication that the instruction cannot be complied with. |
| DM2 | STANDBY | N | Indication that the message will be responded to shortly. |
| DM3 | ROGER<br>*NOTE– ROGER is the only correct response to an uplink free text message.* | N | Indication that the message is received. |
| DM4 | AFFIRM | N | Indication of a positive response to a message. |
| DM5 | NEGATIVE | N | Indication of a negative response to a message. |

*TBL 14–3–19*

**Supplemental Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM164 | WHEN READY | NE | Indication that the associated instruction is to be executed when the flight crew is ready. |
| UM165 | THEN | NE | Used to link two messages, indicating the proper order of execution of clearances/ instructions. |

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM166 | DUE TO TRAFFIC | N | Indication that the associated message is issued due to the specified reason. |
| UM167 | DUE TO AIRSPACE RESTRICTION | N | Indication that the associated message is issued due to the specified reason. |
| UM176 | MAINTAIN OWN SEPARATION AND VMC | W/U | Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions. |

***TBL 14–3–20***

**Supplemental Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM65 | DUE TO WEATHER | N | Indication that the associated message is issued due to specified reason. |
| DM66 | DUE TO AIRCRAFT PERFORMANCE | N | Indication that the associated message is issued due to specified reason. |

***TBL 14–3–21***

**Free Text Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM169 | *(free text)* | R | A message or part of a message that does not conform to any standard message element in the PANSATM (Doc 4444). |
| UM169 | *(free text)* CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION | R | See Note |
| UM169 | *(free text)* “[facility designation]” (for Altimeter reporting Station) | R | See Note |
| UM169 | *(free text)* “[facility designation] ALTIMETER MORE THAN ONE HOUR” OLD | R | See Note |
| UM169 | *(free text)* DUE TO WEATHER | R | See Note |
| UM169 | *(free text)* REST OF ROUTE UNCHANGED | R | See Note |
| UM169 | *(free text)* TRAFFIC FLOW MANAGEMENT REROUTE | R | See Note |

***NOTE–***
*These are FAA scripted free text messages with no GOLD equivalent.*

*TBL 14–3–22*

**Free Text Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM67 | (*free text*)<br>*NOTE– Medium (M) alert attribute.* | N | |
| DM68 | *(free text)*<br>*NOTE 1. – Urgency or Medium (M) alert attribute.*<br>*NOTE 2. – Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.* | Y | |

*TBL 14–3–23*

**System Management Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM159 | ERROR *(error information)* | N | System-generated notification of an error. |
| UM160 | NEXT DATA AUTHORITY *(ICAO facility designation)*<br>*NOTE– The facility designation is required.* | N | System-generated notification of the next data authority or the cancellation thereof. |
| UM161 | END SERVICE | NE | Notification to the avionics that the data link connection with the current data authority is being terminated. |
| UM162 | SERVICE UNAVAILABLE | NE | Notification that the ground system does not support this message. |

*TBL 14–3–24*

**System Management Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM62 | ERROR *(error information)* | N | System-generated notification of an error. |
| DM63 | NOT CURRENT DATA AUTHORITY | N | System-generated rejection of any CPDLC message sent from a ground facility that is not the current data authority. |
| DM64 | (ICAO facility designation)<br>*NOTE– Use by FANS 1/A aircraft in B1 environments.* | N | System-generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported. |

*TBL 14–3–25*
**Additional Uplink Messages**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM176 | MAINTAIN OWN SEPARATION AND VMC | W/U | Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions. |

*TBL 14–3–26*
**Additional Downlink Messages**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM74 | REQUEST TO MAINTAIN OWN SEPARATION AND VMC | N | States a desire by the pilot to provide his/her own separation and remain in VMC. |
| DM78 | AT (*time*) (*distance*) (*to*/*from*) (*position*) | N | At the specified time, the aircraft's position was as specified. |

# PILOT/CONTROLLER GLOSSARY

**PURPOSE**

**a.** This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

**b.** Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

**c.** Terms used in this glossary that apply to flight service station (FSS) roles are included when they differ from air traffic control functions. These terms are followed by "[FSS]."

**d.** This Glossary will be revised, as necessary, to maintain a common understanding of the system.

**EXPLANATION OF CHANGES**

**e.** Terms Added:
APPROACH RUNWAY VERIFICATION
CONNECTION
DEPARTURE CLEARANCE (DCL) APPLICATION
DOWNLINK
ELIGIBILITY
PILOT INITIATED DOWNLINK (PID)
PRIOR PERMISSION REQUIRED (PPR)
TRAJECTORY ALTERING CLEARANCE (TAC)
TRANSFER OF COMMUNICATION (TOC)
UNIDENTIFIED ANOMALOUS PHENOMENA (UAP)
UPLINK

**f.** Terms Deleted:
CONSOLIDATED WAKE TURBULENCE (CWT)
WAKE RE-CATEGORIZATION (RECAT)

**g.** Terms Modified:
AIRCRAFT CLASSES
AIRCRAFT WAKE TURBULENCE CATEGORIES
NAVIGATION REFERENCE SYSTEM (NRS)
TERMINAL DATA LINK SYSTEM (TDLS)
TIE-IN FACILITY
WAKE TURBULENCE

**h.** Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC)– An Air Traffic Tactical Operations facility responsible for monitoring and managing the flow of air traffic throughout the NAS, producing a safe, orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

**a.** Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

**b.** Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR part 93.)

(See CHART SUPPLEMENT.)

**c.** U.S. Notice to Airmen (NOTAM) Office. Responsible for collecting, maintaining, and distributing NOTAMs for the U.S. civilian and military, as well as international aviation communities.

(See NOTICE TO AIRMEN.)

**d.** Weather Unit. Monitor all aspects of weather for the U.S. that might affect aviation including cloud cover, visibility, winds, precipitation, thunderstorms, icing, turbulence, and more. Provide forecasts based on observations and on discussions with meteorologists from various National Weather Service offices, FAA facilities, airlines, and private weather services.

**e.** Air Traffic Organization (ATO) Space Operations and Unmanned Aircraft System (UAS); the Office of Primary Responsibility (OPR) for all space and upper class E tactical operations in the National Airspace System (NAS).

AIR TRAFFIC SERVICE– A generic term meaning:

**a.** Flight Information Service.

**b.** Alerting Service.

**c.** Air Traffic Advisory Service.

**d.** Air Traffic Control Service:

**1.** Area Control Service,

**2.** Approach Control Service, or

**3.** Airport Control Service.

AIR TRAFFIC ORGANIZATION (ATO) – The FAA line of business responsible for providing safe and efficient air navigation services in the national airspace system.

AIR TRAFFIC SERVICE (ATS) ROUTES – The term “ATS Route” is a generic term that includes “VOR Federal airways,” “colored Federal airways,” “jet routes,” and “RNAV routes.” The term “ATS route” does not replace these more familiar route names, but serves only as an overall title when listing the types of routes that comprise the United States route structure.

AIRBORNE– An aircraft is considered airborne when all parts of the aircraft are off the ground.

AIRBORNE DELAY– Amount of delay to be encountered in airborne holding.

AIRBORNE REROUTE (ABRR)– A capability within the Traffic Flow Management System used for the timely development and implementation of tactical reroutes for airborne aircraft. This capability defines a set of aircraft–specific reroutes that address a certain traffic flow problem and then electronically transmits them to En Route Automation Modernization (ERAM) for execution by the appropriate sector controllers.

AIRCRAFT– Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew. The term is inclusive of all types, including but not limited to, airplane, glider, lighter-than-air, powered-lift, and rotorcraft.

(See ICAO term AIRCRAFT.)

AIRCRAFT [ICAO]– Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

AIRCRAFT APPROACH CATEGORY– A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the category for that speed must be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, must use the approach Category B minimums when circling to land. The categories are as follows:

**a.** Category A– Speed less than 91 knots.

**b.** Category B– Speed 91 knots or more but less than 121 knots.

**c.** Category C– Speed 121 knots or more but less than 141 knots.

**d.** Category D– Speed 141 knots or more but less than 166 knots.

**e.** Category E– Speed 166 knots or more.

(Refer to 14 CFR part 97.)

AIRCRAFT CLASSES– For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Super, Heavy, Large, and Small as follows:

**a.** Super– The Airbus A–380–800 (A388) is classified as a super aircraft. A super aircraft is a Category A for terminal wake turbulence separation purposes.

**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. Heavy aircraft are Category B, C, or D for terminal wake turbulence separation purposes.

**c.** Large– Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to but not including 300,000 pounds. Large aircraft are Category F and G for terminal wake turbulence separation purposes.

**d.** Small– Aircraft of 41,000 pounds or less maximum certificated takeoff weight. Small aircraft are Category H and I for terminal wake turbulence separation purposes.

(Refer to AIM.)

AIRCRAFT CONFLICT– Predicted conflict, within EDST of two aircraft, or between aircraft and airspace. A Red alert is used for conflicts when the predicted minimum separation is 5 nautical miles or less. A Yellow alert is used when the predicted minimum separation is between 5 and approximately 12 nautical miles. A Blue alert is used for conflicts between an aircraft and predefined airspace.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT HAZARD AREA (AHA)– Used by ATC to segregate air traffic from a launch vehicle, reentry vehicle, amateur rocket, jettisoned stages, hardware, or falling debris generated by failures associated with any of these activities. An AHA is designated via NOTAM as either a TFR or stationary ALTRV. Unless otherwise specified, the vertical limits of an AHA are from the surface to unlimited.

(See CONTINGENCY HAZARD AREA.)

(See REFINED HAZARD AREA.)

(See TRANSITIONAL HAZARD AREA.)

AIRCRAFT LIST (ACL)– A view available with EDST that lists aircraft currently in or predicted to be in a particular sector's airspace. The view contains textual flight data information in line format and may be sorted into various orders based on the specific needs of the sector team.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT SURGE LAUNCH AND RECOVERY– Procedures used at USAF bases to provide increased launch and recovery rates in instrument flight rules conditions. ASLAR is based on:

**a.** Reduced separation between aircraft which is based on time or distance. Standard arrival separation applies between participants including multiple flights until the DRAG point. The DRAG point is a published location on an ASLAR approach where aircraft landing second in a formation slows to a predetermined airspeed. The DRAG point is the reference point at which MARSA applies as expanding elements effect separation within a flight or between subsequent participating flights.

**b.** ASLAR procedures must be covered in a Letter of Agreement between the responsible USAF military ATC facility and the concerned Federal Aviation Administration facility. Initial Approach Fix spacing requirements are normally addressed as a minimum.

AIRCRAFT WAKE CATEGORIES– For the purposes of Terminal Wake Turbulence Separation Minima, ATC classifies aircraft as Category A through Category I as follows:

**a.** CATEGORY A. The Airbus A–380–800 (A388) is classified as a super aircraft.

**b.** CATEGORY B, C, and D. 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. These are categorized as heavy aircraft.

**c.** CATEGORY E. All B757 aircraft.

**d.** CATEGORY F, and G. Aircraft weighing 41,000 pounds or more maximum certificated takeoff weight, up to but not including 300,000 pounds.

**e.** CATEGORY H and I. Aircraft of less than 41,000 pounds maximum certificated takeoff weight.

(Refer to AIM.)

***AIRMEN'S METEOROLOGICAL INFORMATION (AIRMET)–*** A concise description of an occurrence or expected occurrence of specified en route weather phenomena that may affect the safety of aircraft operations, but at intensities lower than those that require the issuance of a SIGMET. An AIRMET may be issued when any of the following weather phenomena are occurring or expected to occur:

**a.** Moderate turbulence

**b.** Low–level windshear

**c.** Strong surface winds greater than 30 knots

**d.** Moderate icing

**e.** Freezing level

**f.** Mountain obscuration

**g.** IFR

(See CONVECTIVE SIGMET.)
(See CWA.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SAW.)
(See SIGMET.)
(Refer to AIM.)

AIRPLANE– An engine-driven fixed-wing aircraft heavier than air that is supported in flight by the dynamic reaction of the air against its wings.

AIRPORT– An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

AIRPORT ADVISORY AREA– The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located.

(See LOCAL AIRPORT ADVISORY.)
(Refer to AIM.)

AIRPORT ARRIVAL RATE (AAR)– A dynamic input parameter specifying the number of arriving aircraft which an airport or airspace can accept from the ARTCC per hour. The AAR is used to calculate the desired interval between successive arrival aircraft.

AIRPORT DEPARTURE RATE (ADR)– A dynamic parameter specifying the number of aircraft which can depart an airport and the airspace can accept per hour.

AIRPORT ELEVATION– The highest point of an airport's usable runways measured in feet from mean sea level.
(See TOUCHDOWN ZONE ELEVATION.)
(See ICAO term AERODROME ELEVATION.)

AIRPORT LIGHTING– Various lighting aids that may be installed on an airport. Types of airport lighting include:

**a.** Approach Light System (ALS)– An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his/her final approach for landing. Condenser-Discharge Sequential Flashing Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

**1.** ALSF-1– Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.

**2.** ALSF-2– Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.

**3.** SSALF– Simplified Short Approach Light System with Sequenced Flashing Lights.

**4.** SSALR– Simplified Short Approach Light System with Runway Alignment Indicator Lights.

**5.** MALSF– Medium Intensity Approach Light System with Sequenced Flashing Lights.

**6.** MALSR– Medium Intensity Approach Light System with Runway Alignment Indicator Lights.

**7.** RLLS– Runway Lead-in Light System Consists of one or more series of flashing lights installed at or near ground level that provides positive visual guidance along an approach path, either curving or straight, where special problems exist with hazardous terrain, obstructions, or noise abatement procedures.

**8.** RAIL– Runway Alignment Indicator Lights– Sequenced Flashing Lights which are installed only in combination with other light systems.

**9.** ODALS– Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway edge when installed on a runway equipped with a VASI.
(Refer to FAA Order JO 6850.2, Visual Guidance Lighting Systems.)

**b.** Runway Lights/Runway Edge Lights– Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

**c.** Touchdown Zone Lighting– Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

**d.** Runway Centerline Lighting– Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

**e.** Threshold Lights– Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

**f.** Runway End Identifier Lights (REIL)– Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

**g.** Visual Approach Slope Indicator (VASI)– An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is "on path" if he/she sees red/white, "above path" if white/white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

**h.** Precision Approach Path Indicator (PAPI)– An airport lighting facility, similar to VASI, providing vertical approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or

four lights, normally installed on the left side of the runway, and have an effective visual range of about 5 miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high intensity red and white focused light beams which indicate that the pilot is “on path” if the pilot sees an equal number of white lights and red lights, with white to the left of the red; “above path” if the pilot sees more white than red lights; and “below path” if the pilot sees more red than white lights.

**i.** Boundary Lights– Lights defining the perimeter of an airport or landing area.

(Refer to AIM.)

AIRPORT MARKING AIDS– Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

**a.** Visual.

**b.** Nonprecision instrument.

**c.** Precision instrument.

(Refer to AIM.)

AIRPORT REFERENCE POINT (ARP)– The approximate geometric center of all usable runway surfaces.

AIRPORT RESERVATION OFFICE– Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON– A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.)
(See SPECIAL VFR OPERATIONS.)
(See ICAO term AERODROME BEACON.)
(Refer to AIM.)

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)– Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

**a.** ASDE–3– a Surface Movement Radar.

**b.** ASDE–X– a system that uses an X–band Surface Movement Radar, multilateration, and ADS–B.

**c.** Airport Surface Surveillance Capability (ASSC)– A system that uses Surface Movement Radar, multilateration, and ADS–B.

AIRPORT SURVEILLANCE RADAR– Approach control radar used to detect and display an aircraft’s position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS–

(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE– A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.)
(See TOWER.)
(See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER–

(See TOWER.)

AIRSPACE CONFLICT– Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)– AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expect Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY– Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED– The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed" means one of the following:

**a.** Indicated Airspeed– The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term "airspeed."

(Refer to 14 CFR part 1.)

**b.** True Airspeed– The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."

AIRSPACE RESERVATION– The term used in oceanic ATC for airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. Airspace reservations must be classified as either "moving" or "stationary."

(See MOVING AIRSPACE RESERVATION)
(See STATIONARY AIRSPACE RESERVATION.)
(See ALTITUDE RESERVATION.)

AIRSTART– The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

AIRWAY– A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.

(See FEDERAL AIRWAYS.)
(See ICAO term AIRWAY.)
(Refer to 14 CFR part 71.)
(Refer to AIM.)

AIRWAY [ICAO]– A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

AIRWAY BEACON– Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site.

(Refer to AIM.)

AIS–

(See AERONAUTICAL INFORMATION SERVICES.)

AIT–

(See AUTOMATED INFORMATION TRANSFER.)

ALERFA (Alert Phase) [ICAO]– A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

ALERT– A notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict, as detected by Automated Problem Detection (APD).

ALERT AREA–

(See SPECIAL USE AIRSPACE.)

ALERT NOTICE (ALNOT)– A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

ALERTING SERVICE– A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

ALNOT–
(See ALERT NOTICE.)

ALONG–TRACK DISTANCE (ATD)– The horizontal distance between the aircraft's current position and a fix measured by an area navigation system that is not subject to slant range errors.

ALPHANUMERIC DISPLAY– Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display.

ALTERNATE AERODROME [ICAO]– An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.
Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT– An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.
(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING– The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).
(Refer to 14 CFR part 91.)
(Refer to AIM.)

ALTITUDE– The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).
(See FLIGHT LEVEL.)

**a.** MSL Altitude– Altitude expressed in feet measured from mean sea level.

**b.** AGL Altitude– Altitude expressed in feet measured above ground level.

**c.** Indicated Altitude– The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.
(See ICAO term ALTITUDE.)

ALTITUDE [ICAO]– The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

***ALTITUDE READOUT–*** An aircraft's altitude, transmitted via the Mode C transponder feature, that is visually displayed in 100-foot increments on a radar scope having readout capability.
(See ALPHANUMERIC DISPLAY.)
(Refer to AIM.)

ALTITUDE RESERVATION (ALTRV)– Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility. ALTRVs must be classified as either "moving" or "stationary."
(See MOVING ALTITUDE RESERVATION.)
(See STATIONARY ALTITUDE RESERVATION.)
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ALTITUDE RESTRICTION– An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

***ALTITUDE RESTRICTIONS ARE CANCELED–*** Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

ALTRV–
(See ALTITUDE RESERVATION.)

AMVER–
(See AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM.)

APB–
(See AUTOMATED PROBLEM DETECTION BOUNDARY.)

APD–
(See AUTOMATED PROBLEM DETECTION.)

APDIA–
(See AUTOMATED PROBLEM DETECTION INHIBITED AREA.)

APPROACH CLEARANCE– Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required.
(See CLEARED APPROACH.)
(See INSTRUMENT APPROACH PROCEDURE.)
(Refer to AIM.)
(Refer to 14 CFR part 91.)

APPROACH CONTROL FACILITY– A terminal ATC facility that provides approach control service in a terminal area.
(See APPROACH CONTROL SERVICE.)
(See RADAR APPROACH CONTROL FACILITY.)

APPROACH CONTROL SERVICE– Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.
(See ICAO term APPROACH CONTROL SERVICE.)
(Refer to AIM.)

APPROACH CONTROL SERVICE [ICAO]– Air traffic control service for arriving or departing controlled flights.

APPROACH GATE– An imaginary point used within ATC as a basis for vectoring aircraft to the final approach course. The gate will be established along the final approach course 1 mile from the final approach fix on the side away from the airport and will be no closer than 5 miles from the landing threshold.

APPROACH/DEPARTURE HOLD AREA– The locations on taxiways in the approach or departure areas of a runway designated to protect landing or departing aircraft. These locations are identified by signs and markings.

APPROACH LIGHT SYSTEM–
(See AIRPORT LIGHTING.)

APPROACH RUNWAY VERIFICATION– A STARS functionality that provides audible and visual alerts to tower and/or TRACON controllers when an aircraft is on its final approach course but *not* aligned with its assigned landing runway, or if the runway is closed.

APPROACH SEQUENCE– The order in which aircraft are positioned while on approach or awaiting approach clearance.
(See LANDING SEQUENCE.)
(See ICAO term APPROACH SEQUENCE.)

APPROACH SEQUENCE [ICAO]– The order in which two or more aircraft are cleared to approach to land at the aerodrome.

***APPROACH SPEED–*** The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APPROACH WITH VERTICAL GUIDANCE (APV)– A term used to describe RNAV approach procedures that provide lateral and vertical guidance but do not meet the requirements to be considered a precision approach.

APPROPRIATE ATS AUTHORITY [ICAO]– The relevant authority designated by the State responsible for providing air traffic services in the airspace concerned. In the United States, the "appropriate ATS authority" is the Program Director for Air Traffic Planning and Procedures, ATP-1.

APPROPRIATE AUTHORITY–

**a.** Regarding flight over the high seas: the relevant authority is the State of Registry.

**b.** Regarding flight over other than the high seas: the relevant authority is the State having sovereignty over the territory being overflown.

***APPROPRIATE OBSTACLE CLEARANCE MINIMUM ALTITUDE–*** Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

***APPROPRIATE TERRAIN CLEARANCE MINIMUM ALTITUDE–*** Any of the following:
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)

APRON– A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance. With regard to seaplanes, a ramp is used for access to the apron from the water.
(See ICAO term APRON.)

APRON [ICAO]– A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers, mail or cargo, refueling, parking or maintenance.

ARC– The track over the ground of an aircraft flying at a constant distance from a navigational aid by reference to distance measuring equipment (DME).

AREA CONTROL CENTER [ICAO]– An air traffic control facility primarily responsible for ATC services being provided IFR aircraft during the en route phase of flight. The U.S. equivalent facility is an air route traffic control center (ARTCC).

AREA NAVIGATION (RNAV)– A method of navigation which permits aircraft operation on any desired flight path within the coverage of ground– or space–based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.
Note: Area navigation includes performance–based navigation as well as other operations that do not meet the definition of performance–based navigation.

AREA NAVIGATION (RNAV) APPROACH CONFIGURATION:

**a.** STANDARD T– An RNAV approach whose design allows direct flight to any one of three initial approach fixes (IAF) and eliminates the need for procedure turns. The standard design is to align the procedure on the extended centerline with the missed approach point (MAP) at the runway threshold, the final approach fix (FAF), and the initial approach/intermediate fix (IAF/IF). The other two IAFs will be established perpendicular to the IF.

**b.** MODIFIED T– An RNAV approach design for single or multiple runways where terrain or operational constraints do not allow for the standard T. The "T" may be modified by increasing or decreasing the angle from the corner IAF(s) to the IF or by eliminating one or both corner IAFs.

**c.** STANDARD I– An RNAV approach design for a single runway with both corner IAFs eliminated. Course reversal or radar vectoring may be required at busy terminals with multiple runways.

**d.** TERMINAL ARRIVAL AREA (TAA)– The TAA is controlled airspace established in conjunction with the Standard or Modified T and I RNAV approach configurations. In the standard TAA, there are three areas: straight-in, left base, and right base. The arc boundaries of the three areas of the TAA are published portions of the approach and allow aircraft to transition from the en route structure direct to the nearest IAF. TAAs will also eliminate or reduce feeder routes, departure extensions, and procedure turns or course reversal.

**1.** STRAIGHT-IN AREA– A 30 NM arc centered on the IF bounded by a straight line extending through the IF perpendicular to the intermediate course.

**2.** LEFT BASE AREA– A 30 NM arc centered on the right corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

**3.** RIGHT BASE AREA– A 30 NM arc centered on the left corner IAF. The area shares a boundary with the straight-in area except that it extends out for 30 NM from the IAF and is bounded on the other side by a line extending from the IF through the FAF to the arc.

AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH–
A GPS approach, which requires vertical guidance, used in lieu of another type of PRM approach to conduct approaches to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet, where simultaneous close parallel approaches are permitted. Also used in lieu of an ILS PRM and/or LDA PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations.

ARMY AVIATION FLIGHT INFORMATION BULLETIN– A bulletin that provides air operation data covering Army, National Guard, and Army Reserve aviation activities.

ARO–
(See AIRPORT RESERVATION OFFICE.)

ARRESTING SYSTEM– A safety device consisting of two major components, namely, engaging or catching devices and energy absorption devices for the purpose of arresting both tailhook and/or nontailhook-equipped aircraft. It is used to prevent aircraft from overrunning runways when the aircraft cannot be stopped after landing or during aborted takeoff. Arresting systems have various names; e.g., arresting gear, hook device, wire barrier cable.
(See ABORT.)
(Refer to AIM.)

ARRIVAL CENTER– The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY– A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL/DEPARTURE WINDOW (ADW)– A depiction presented on an air traffic control display, used by the controller to prevent possible conflicts between arrivals to, and departures from, a runway. The ADW identifies that point on the final approach course by which a departing aircraft must have begun takeoff.

ARRIVAL SECTOR (En Route)– An operational control sector containing one or more meter fixes on or near the TRACON boundary.

ARRIVAL TIME– The time an aircraft touches down on arrival.

ARSR–
(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC–
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ASDA–
(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]–
(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE–
(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASLAR–
(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASR–
(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH–
(See SURVEILLANCE APPROACH.)

ASSOCIATED– A radar target displaying a data block with flight identification and altitude information.
(See UNASSOCIATED.)

ATC–
(See AIR TRAFFIC CONTROL.)

ATC ADVISES– Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.
(See ADVISORY.)

ATC ASSIGNED AIRSPACE– Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.
(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE–
(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS– Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS– Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., “Turn left heading two five zero,” “Go around,” “Clear the runway.”
(Refer to 14 CFR part 91.)

ATC PREFERRED ROUTE NOTIFICATION– EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.
(See ROUTE ACTION NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES– Preferred routes that are not automatically applied by Host.

ATC REQUESTS– Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES– Communications and security tracking provided by an ATC facility in support of the DHS, the DoD, or other Federal security elements in the interest of national security. Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION– The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING– The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DoD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

**a.** Radar (See RADAR.)

**b.** ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)

**c.** WAM (See WIDE AREA MULTILATERATION.)

(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS–B, PSR, SSR or any comparable ground–based system that enables the identification of aircraft.

Note: A comparable ground–based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR.

ATCAA–
(See ATC ASSIGNED AIRSPACE.)

ATCRBS–
(See RADAR.)

ATCSCC–
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT–
(See TOWER.)

ATD–
(See ALONG–TRACK DISTANCE.)

ATIS–
(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]–
(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATO–
(See AIR TRAFFIC ORGANIZATION.)

ATPA–
(See AUTOMATED TERMINAL PROXIMITY ALERT.)

ATS ROUTE [ICAO]– A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note: The term "ATS Route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)- The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH–An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED EMERGENCY DESCENT–
(See EMERGENCY DESCENT MODE.)

AUTOMATED INFORMATION TRANSFER (AIT)– A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM– A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.
(See FAA Order JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)– An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)– The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.
(See EN ROUTE DECISION SUPPORT TOOL.)

AUTOMATED PROBLEM DETECTION INHIBITED AREA (APDIA)– Airspace surrounding a terminal area within which APD is inhibited for all flights within that airspace.

AUTOMATED SERVICES–Services delivered via an automated system (that is, without human interaction). For example, flight plans, Notices to Airmen (NOTAMs), interactive maps, computer-generated text-to-speech messages, short message service, or email.

AUTOMATED TERMINAL PROXIMITY ALERT (ATPA)– Monitors the separation of aircraft on the Final Approach Course (FAC), displaying a graphical notification (cone and/or mileage) when a potential loss of separation is detected. The warning cone (Yellow) will display at 45 seconds and the alert cone (Red) will display at 24 seconds prior to predicted loss of separation. Current distance between two aircraft on final will be displayed in line 3 of the full data block of the trailing aircraft in corresponding colors.

AUTOMATED WEATHER SYSTEM– Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS) and Automated Weather Observation System (AWOS).

AUTOMATED UNICOM– Provides completely automated weather, radio check capability and airport advisory information on an Automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability will be published in the Chart Supplement and approach charts.

AUTOMATIC ALTITUDE REPORT–
(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING– That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM– U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]– A surveillance technique in which aircraft automatically provide, via a data link, data derived from on–board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST (ADS-B)– A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GNSS–derived position and other required information such as identity and velocity, which is then received by a ground–based or space–based receiver for processing and display at an air traffic control facility, as well as by suitably equipped aircraft.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)
(See COOPERATIVE SURVEILLANCE.)
(See GLOBAL POSITIONING SYSTEM.)
(See SPACE–BASED ADS–B.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN (ADS–B In)– Aircraft avionics capable of receiving ADS–B Out transmissions directly from other aircraft, as well as traffic or weather information transmitted from ground stations.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–REBROADCAST.)
(See FLIGHT INFORMATION SERVICE–BROADCAST.)
(See TRAFFIC INFORMATION SERVICE–BROADCAST.)

AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST OUT (ADS–B Out)– The transmitter onboard an aircraft or ground vehicle that periodically broadcasts its GNSS–derived position along with other required information, such as identity, altitude, and velocity.

(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)
(See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST IN.)

AUTOMATIC DEPENDENT SURVEILLANCE–CONTRACT (ADS–C)– A data link position reporting system, controlled by a ground station, that establishes contracts with an aircraft's avionics that occur automatically whenever specific events occur, or specific time intervals are reached.

AUTOMATIC DEPENDENT SURVEILLANCE- REBROADCAST (ADS-R)– A datalink translation function of the ADS–B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 MHz). The ADS–B system receives the ADS–B messages transmitted on one frequency and ADS–R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS–B In equipped aircraft to see nearby ADS–B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS–B frequency exchange information directly and do not require the ADS–R translation function.

AUTOMATIC DIRECTION FINDER– An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum.

(See BEARING.)
(See NONDIRECTIONAL BEACON.)

AUTOMATIC FLIGHT INFORMATION SERVICE (AFIS) – ALASKA FSSs ONLY– The continuous broadcast of recorded non–control information at airports in Alaska where a FSS provides local airport advisory service. The AFIS broadcast automates the repetitive transmission of essential but routine information such as weather, wind, altimeter, favored runway, braking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/AWOS frequency).

AUTOMATIC TERMINAL INFORMATION SERVICE– The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g., “Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa.”

(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.)

(Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO]– The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION– A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

**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 WATCH NOTIFICATION MESSAGE– The Storm Prediction Center (SPC) issues Aviation Watch Notification Messages (SAW) to provide an area threat alert for the aviation meteorology community to forecast organized severe thunderstorms that may produce tornadoes, large hail, and/or convective damaging winds as indicated in Public Watch Notification Messages within the Continental U.S. A SAW message provides a description of the type of watch issued by SPC, a valid time, an approximation of the area in a watch, and primary hazard(s).

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.)

COMMUNITY–BASED ORGANIZATION (CBO)– A membership–based entity, described under Section 501(a,c), whose mission is the furtherance of model aviation. (see also, 49 United States Code (USC) §44809 (h) and Advisory Circular (AC) 91–57).

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.)

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."

COMPUTER NAVIGATION FIX (CNF)– A Computer Navigation Fix is a point defined by a latitude/longitude coordinate and is required to support Performance–Based Navigation (PBN) operations. A five–letter identifier denoting a CNF can be found next to an "x" on en route charts and on some approach charts. Eventually, all CNFs will be labeled and begin with the letters "CF" followed by three consonants (e.g., 'CFWBG'). CNFs are not recognized by ATC, are not contained in ATC fix or automation databases, and are not used for ATC purposes. Pilots should not use CNFs for point–to–point navigation (e.g., proceed direct), filing a flight plan, or in aircraft/ATC communications. Use of CNFs has not been adopted or recognized by the International Civil Aviation Organization (ICAO).

(REFER to AIM 1–1–17b5(i)(2), Global Positioning System (GPS).

CONDITIONS NOT MONITORED– When an airport operator cannot monitor the condition of the movement area or airfield surface area, this information is issued as a NOTAM. Usually necessitated due to staffing, operating hours or other mitigating factors associated with airport operations.

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 must be issued when this procedure is applied.

Note: This procedure must 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.

CONNECTION– A virtual connection between the ground system and the aircraft for the exchange of CPDLC messages.

CONSOLAN– A low frequency, long-distance NAVAID used principally for transoceanic navigations.

CONSTRAINT SATISFACTION POINT (CSP)– Meter Reference Elements (MREs) that are actively scheduled by TBFM. Constraint satisfaction occurs when the Scheduled Time of Arrival generated for each metered flight conforms to all the scheduling constraints specified at all the applicable CSPs.

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.

CONTINGENCY HAZARD AREA (CHA)– Used by ATC. Areas of airspace that are defined and distributed in advance of a launch or reentry operation and are activated in response to a failure.

(See AIRCRAFT HAZARD AREA.)
(See REFINED HAZARD AREA.)
(See TRANSITIONAL HAZARD AREA.)

***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

# D

D–ATIS–
(See DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE.)

D–ATIS [ICAO]–
(See ICAO Term DATA LINK 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.)

DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE (D–ATIS) [ICAO]– The provision of ATIS via data link.

DCL–
(See DEPARTURE CLEARANCE APPLICATION.)

DCT–
(See DELAY COUNTDOWN TIMER.)

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.

DEBRIS RESPONSE AREA (DRA)– Used by ATC. Areas of airspace that may be activated in response to unplanned falling debris in the NAS.

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 (DH)– 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 COUNTDOWN TIMER (DCT)– The display of the delay that must be absorbed by a flight prior to crossing a Meter Reference Element (MRE) to meet the TBFM Scheduled Time of Arrival (STA). It is calculated by taking the difference between the frozen STA and the Estimated Time of Arrival (ETA).

***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).)

DEPARTURE CENTER– The ARTCC having jurisdiction for the airspace that generates a flight to the impacted airport.

DEPARTURE CLEARANCE (DCL) APPLICATION– The DCL application provides up to nine Selectable Fields for the tower controller to enter all other clearance information.

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.

DEPARTURE VIEWER– A capability within the Traffic Flow Management System (TFMS) that provides combined displays for monitoring departure by fixes and departure airports. Traffic management personnel can customize the displays by selecting the departure airports and fixes of interest. The information displayed is the demand for the resource (fix or departure airport) in time bins with the flight list and a flight history for one flight at a time. From the display, flights can be selected for route amendment, one or more at a time, and the Route Amendment Dialogue (RAD) screen automatically opens for easy route selection and execution. Reroute options are based on Coded Departure Route (CDR) database and Trajectory Options Set (TOS) (when available).

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.

DEVIATION–

**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.

DOMESTIC NOTICE− A special notice or notice containing graphics or plain language text pertaining to almost every aspect of aviation, such as military training areas, large scale sporting events, air show information, Special

Traffic Management Programs (STMPs), and airport–specific information. These notices are applicable to operations within the United States and can be found on the Domestic Notices website.

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.

DOWNLINK– CPDLC message sent from the flight deck to ATC.

DOWNWIND LEG–
(See TRAFFIC PATTERN.)

DP–
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRA–
(See DEBRIS RESPONSE AREA.)

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.)

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 FAA Order 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

E-MSAW–
(See EN ROUTE MINIMUM SAFE ALTITUDE WARNING.)

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).)

ELIGIBILITY– Designates which sector is eligible to exchange CPDLC messages with a specific aircraft.

ELT–
(See EMERGENCY LOCATOR TRANSMITTER.)

EMBEDDED ROUTE TEXT– An EDST notification that an ADR/ADAR/AAR has been applied to the flight plan. Within the route field, sub–fields consisting of an adapted route or an embedded change in the route are color–coded in cyan with cyan brackets around the sub–field.
(See EN ROUTE DECISION SUPPORT TOOL.)

***EMERGENCY–*** A distress or an urgency condition.

EMERGENCY AUTOLAND SYSTEM– This system, if activated, will determine an optimal airport, plot a course, broadcast the aircraft's intentions, fly to the airport, land, and (depending on the model) shut down the engines. Though the system will broadcast the aircraft's intentions, the controller should assume that transmissions to the aircraft will not be acknowledged.

EMERGENCY DESCENT MODE– This automated system senses conditions conducive to hypoxia (cabin depressurization). If an aircraft is equipped and the system is activated, it is designed to turn the aircraft up to 90 degrees, then descend to a lower altitude and level off, giving the pilot(s) time to recover.

EMERGENCY LOCATOR TRANSMITTER (ELT)– 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.)

ENHANCED FLIGHT VISION SYSTEM (EFVS)– An EFVS is an installed aircraft system which uses an electronic means to provide a display of the forward external scene topography (the natural or man–made features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, including but not limited to forward–looking infrared, millimeter wave radiometry, millimeter wave radar, or low–light level image intensification. An EFVS includes the display element, sensors, computers and power supplies, indications, and controls. An operator's authorization to conduct an EFVS operation may have provisions which allow pilots to conduct IAPs when the reported weather is below minimums prescribed on the IAP to be flown.

ENHANCED SPECIAL REPORTING SERVICE (eSRS)– An automated service used to enhance search and rescue operations that provides flight service specialists in Alaska direct information from the aircraft's registered tracking device.

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 (EDST)– 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 (E–MSAW)– 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 TRANSITION–
(See SEGMENTS OF A SID/STAR.)

EN ROUTE TRANSITION WAYPOINT
(See SEGMENTS OF A SID/STAR.)

eSRS–
(See ENHANCED SPECIAL REPORTING SERVICE.)

EST–
(See ESTIMATED.)

ESTABLISHED– To be stable or fixed at an altitude or on a course, route, route segment, heading, instrument approach or departure procedure, etc.

ESTABLISHED ON RNP (EoR) CONCEPT– A system of authorized instrument approaches, ATC procedures, surveillance, and communication requirements that allow aircraft operations to be safely conducted with approved reduced separation criteria once aircraft are established on a PBN segment of a published instrument flight procedure.

ESTIMATED (EST)–When used in NOTAMs “EST” is a contraction that is used by the issuing authority only when the condition is expected to return to service prior to the expiration time. Using “EST” lets the user know that this NOTAM has the possibility of returning to service earlier than the expiration time. Any NOTAM which includes an “EST” will be auto–expired at the designated expiration time.

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.

# N

NAS–
(See NATIONAL AIRSPACE SYSTEM.)

NAT HLA–
(See NORTH ATLANTIC HIGH LEVEL AIRSPACE.)

NATIONAL AIRSPACE SYSTEM– The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE (NBCAP)– Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR).
(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA DIGEST (NFDD)– A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Airmen, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

NATIONAL SEARCH AND RESCUE PLAN– An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

NATIONAL SECURITY AREA (NSA)–
(See SPECIAL USE AIRSPACE.)

NAVAID–
(See NAVIGATIONAL AID.)

NAVAID CLASSES– VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAIDs are:

**a.** T– Terminal.

**b.** L– Low altitude.

**c.** H– High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in the Chart Supplement.

NAVIGABLE AIRSPACE– Airspace at and above the minimum flight altitudes prescribed in the CFRs including airspace needed for safe takeoff and landing.
(Refer to 14 CFR part 91.)

NAVIGATION REFERENCE SYSTEM (NRS)– The NRS is a system of waypoints for use within the United States for flight planning and navigation without reference to ground based navigational aids. These waypoints are located in a grid pattern along defined latitude and longitude lines and are available for use at or above FL180 by aircraft capable of point-to-point navigation.

NAVIGATION SPECIFICATION [ICAO]– A set of aircraft and flight crew requirements needed to support performance–based navigation operations within a defined airspace. There are two kinds of navigation specifications:

**a.** RNP specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP; e.g., RNP 4, RNP APCH.

**b.** RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alerting, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

Note: The Performance–based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.

NAVIGATIONAL AID– Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

(See AIR NAVIGATION FACILITY.)

NAVSPEC-

(See NAVIGATION SPECIFICATION [ICAO].)

NBCAP AIRSPACE–

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB–

(See NONDIRECTIONAL BEACON.)

***NEGATIVE–*** "No," or "permission not granted," or "that is not correct."

***NEGATIVE CONTACT–*** Used by pilots to inform ATC that:

**a.** Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.

**b.** They were unable to contact ATC on a particular frequency.

NFDD–

(See NATIONAL FLIGHT DATA DIGEST.)

NIGHT– The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

(See ICAO term NIGHT.)

NIGHT [ICAO]– The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

Note: Civil twilight ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

***NO GYRO APPROACH–*** A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate.

(Refer to AIM.)

***NO GYRO VECTOR–***

(See NO GYRO APPROACH.)

***NO TRANSGRESSION ZONE (NTZ)–*** The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses, in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER– Author-izes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

NONCOMMON ROUTE/PORTION– That segment of a North American Route between the inland navigation facility and a designated North American terminal.

NON–COOPERATIVE SURVEILLANCE– Any surveillance system, such as primary radar, that is not dependent upon the presence of any equipment on the aircraft or vehicle to be tracked.

(See COOPERATIVE SURVEILLANCE.)

(See RADAR.)

# P

P TIME–
(See PROPOSED DEPARTURE TIME.)

P-ACP–
(See PREARRANGED COORDINATION PROCEDURES.)

PAN-PAN– The international radio-telephony urgency signal. When repeated three times, indicates uncertainty or alert followed by the nature of the urgency.
(See MAYDAY.)
(Refer to AIM.)

PAO–
(See PUBLIC AIRCRAFT OPERATION.)

PAR–
(See PRECISION APPROACH RADAR.)

PAR [ICAO]–
(See ICAO Term PRECISION APPROACH RADAR.)

PARALLEL ILS APPROACHES– Approaches to parallel runways by IFR aircraft which, when established inbound toward the airport on the adjacent final approach courses, are radar-separated by at least 2 miles.
(See FINAL APPROACH COURSE.)
(See SIMULTANEOUS ILS APPROACHES.)

PARALLEL OFFSET ROUTE– A parallel track to the left or right of the designated or established airway/route. Normally associated with Area Navigation (RNAV) operations.
(See AREA NAVIGATION.)

PARALLEL RUNWAYS– Two or more runways at the same airport whose centerlines are parallel. In addition to runway number, parallel runways are designated as L (left) and R (right) or, if three parallel runways exist, L (left), C (center), and R (right).

PBCT–
(See PROPOSED BOUNDARY CROSSING TIME.)

PBN–
(See ICAO Term PERFORMANCE–BASED NAVIGATION.)

PDC–
(See PRE–DEPARTURE CLEARANCE.)

PDRR–
(See PRE–DEPARTURE REROUTE.)

PERFORMANCE–BASED NAVIGATION (PBN) [ICAO]– Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

Note: Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability, and functionality needed for the proposed operation in the context of a particular airspace concept.

PERMANENT ECHO– Radar signals reflected from fixed objects on the earth's surface; e.g., buildings, towers, terrain. Permanent echoes are distinguished from "ground clutter" by being definable locations rather than large areas. Under certain conditions they may be used to check radar alignment.

PERTI–
(See PLAN, EXECUTE, REVIEW, TRAIN, IMPROVE.)

PGUI–
(See PLANVIEW GRAPHICAL USER INTERFACE.)

PHOTO RECONNAISSANCE– Military activity that requires locating individual photo targets and navigating to the targets at a preplanned angle and altitude. The activity normally requires a lateral route width of 16 NM and altitude range of 1,500 feet to 10,000 feet AGL.

PILOT BRIEFING– The gathering, translation, interpretation, and summarization of weather and aeronautical information into a form usable by the pilot or flight supervisory personnel to assist in flight planning and decision–making for the safe and efficient operation of aircraft. These briefings may include, but are not limited to, weather observations, forecasts, and aeronautical information (for example, NOTAMs, military activities, flow control information, and temporary flight restrictions [TFR]).
(Refer to AIM.)

PILOT IN COMMAND– The pilot responsible for the operation and safety of an aircraft during flight time.
(Refer to 14 CFR part 91.)

PILOT INITIATED DOWNLINK (PID)– Any message exchange that originates from the flight deck.

PILOT WEATHER REPORT– A report of meteorological phenomena encountered by aircraft in flight.
(Refer to AIM.)

***PILOT'S DISCRETION–*** When used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever he/she wishes and conducting the climb or descent at any rate he/she wishes. He/she may temporarily level off at any intermediate altitude. However, once he/she has vacated an altitude, he/she may not return to that altitude.

PIREP–
(See PILOT WEATHER REPORT.)

PITCH POINT– A fix/waypoint that serves as a transition point from a departure procedure or the low altitude ground–based navigation structure into the high altitude waypoint system.

PLAN, EXECUTE, REVIEW, TRAIN, IMPROVE (PERTI)– A process that delivers a one–day detailed plan for NAS operations, and a two–day outlook, which sets NAS performance goals for high impact constraints. PLAN: Increase lead time for identifying aviation system constraint planning and goals while utilizing historical NAS performance data and constraints to derive successful and/or improved advance planning strategies. EXECUTE: Set goals and a strategy. The Air Traffic Control System Command Center (ATCSCC), FAA field facilities, and aviation stakeholders execute the strategy and work to achieve the desired/planned outcomes. REVIEW: Utilize post event analysis and lessons learned to define and implement future strategies and operational triggers based on past performance and outcomes, both positive and negative. TRAIN: Develop training that includes rapid and continuous feedback to operational personnel and provides increased data and weather knowledge and tools for analytical usage and planning. IMPROVE: Implement better information sharing processes, technologies, and procedures that improve the skills and technology needed to implement operational insights and improvements.

PLANS DISPLAY– A display available in EDST that provides detailed flight plan and predicted conflict information in textual format for requested Current Plans and all Trial Plans.
(See EN ROUTE DECISION SUPPORT TOOL)

PLANVIEW GRAPHICAL USER INTERFACE (PGUI)– A TBFM display that provides a spatial display of individual aircraft track information.

POFZ–
(See PRECISION OBSTACLE FREE ZONE.)

POINT OUT–
(See RADAR POINT OUT.)

POINT-TO-POINT (PTP)– A level of NRR service for aircraft that is based on traditional waypoints in their FMSs or RNAV equipage.

POLAR TRACK STRUCTURE– A system of organized routes between Iceland and Alaska which overlie Canadian MNPS Airspace.

POSITION REPORT– A report over a known location as transmitted by an aircraft to ATC.
(Refer to AIM.)

POSITION SYMBOL– A computer-generated indication shown on a radar display to indicate the mode of tracking.

POSITIVE CONTROL– The separation of all air traffic within designated airspace by air traffic control.

POWERED-LIFT– A heavier-than-air aircraft capable of vertical takeoff, vertical landing, and low-speed flight that depends principally on engine-driven lift devices during these flight regimes and on nonrotating airfoil(s) for lift during horizontal flight. Powered-lift aircraft can operate on routes or altitudes specifically prescribed for powered-lift by the FAA.

PRACTICE INSTRUMENT APPROACH– An instrument approach procedure conducted by a VFR or an IFR aircraft for the purpose of pilot training or proficiency demonstrations.

PRE–DEPARTURE CLEARANCE– An application with the Terminal Data Link System (TDLS) that provides clearance information to subscribers, through a service provider, in text to the cockpit or gate printer.

PRE–DEPARTURE REROUTE (PDRR)– A capability within the Traffic Flow Management System that enables ATC to quickly amend and execute revised departure clearances that mitigate en route constraints or balance en route traffic flows.

PREARRANGED COORDINATION– A standardized procedure which permits an air traffic controller to enter the airspace assigned to another air traffic controller without verbal coordination. The procedures are defined in a facility directive which ensures approved separation between aircraft.

PREARRANGED COORDINATION PROCEDURES– A facility's standardized procedure that describes the process by which one controller must allow an aircraft to penetrate or transit another controller's airspace in a manner that assures approved separation without individual coordination for each aircraft.

PRECIPITATION– Any or all forms of water particles (rain, sleet, hail, or snow) that fall from the atmosphere and reach the surface.

PRECISION APPROACH–
(See PRECISION APPROACH PROCEDURE.)

PRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which an electronic glideslope or other type of glidepath is provided; e.g., ILS, PAR, and GLS.
(See INSTRUMENT LANDING SYSTEM.)
(See PRECISION APPROACH RADAR.)

PRECISION APPROACH RADAR– Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope.
(See GLIDEPATH.)
(See PAR.)
(See ICAO term PRECISION APPROACH RADAR.)
(Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]– Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

PRECISION OBSTACLE FREE ZONE (POFZ)– An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM– Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents NTZ surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.

(Refer to AIM.)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)– A self-contained system used on board some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERRED IFR ROUTES– Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S., and are also available at https://www.fly.faa.gov/rmt/nfdc_preferred_routes_database.jsp. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes may be defined by DPs, SIDs, or STARs; NAVAIDs, Waypoints, etc.; high or low altitude airways; or any combinations thereof. Because they often share elements with adapted routes, pilots' use of preferred IFR routes can minimize flight plan route amendments.

(See ADAPTED ROUTES.)
(See CENTER'S AREA.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See INSTRUMENT DEPARTURE PROCEDURE.)
(See STANDARD TERMINAL ARRIVAL.)
(Refer to CHART SUPPLEMENT U.S.)

PRE-FLIGHT PILOT BRIEFING–

(See PILOT BRIEFING.)

PREVAILING VISIBILITY–

(See VISIBILITY.)

PRIMARY RADAR TARGET– An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRIOR PERMISSION REQUIRED (PPR)– Prior Permission Required (PPR) means prior permission required to have full operational use of a runway, taxiway, apron, or airport facility/service. Means of communication to the airport can be telephone and/or radio. If PPR and another exception are used in same NOTAM, the PPR should come first.

PRM–
(See AREA NAVIGATION (RNAV) GLOBAL POSITIONING SYSTEM (GPS) PRECISION RUNWAY MONITORING (PRM) APPROACH.)
(See PRM APPROACH.)
(See PRECISION RUNWAY MONITOR SYSTEM.)

PRM APPROACH– An instrument approach procedure titled ILS PRM, RNAV PRM, LDA PRM, or GLS PRM conducted to parallel runways separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Use of an enhanced display with alerting, a No Transgression Zone (NTZ), secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are required for all PRM approaches. Depending on the runway spacing, the approach courses may be parallel or one approach course must be offset. PRM procedures are also used to conduct Simultaneous Offset Instrument Approach (SOIA) operations. In SOIA, one straight–in ILS PRM, RNAV PRM, GLS PRM, and one offset LDA PRM, RNAV PRM or GLS PRM approach are utilized. PRM procedures are terminated and a visual segment begins at the offset approach missed approach point where the minimum distance between the approach courses is 3000 feet. Runway spacing can be as close as 750 feet.
(Refer to AIM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN– The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.
(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]– A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.
Note 1: Procedure turns are designated “left” or “right” according to the direction of the initial turn.
Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND– That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of “procedure turn inbound” is normally used by ATC as a position report for separation purposes.
(See FINAL APPROACH COURSE.)
(See PROCEDURE TURN.)
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT– An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glideslope or other appropriate minimum altitude is intercepted.

PROGRESS REPORT–
(See POSITION REPORT.)

PROGRESSIVE TAXI– Precise taxi instructions given to a pilot unfamiliar with the airport or issued in stages as the aircraft proceeds along the taxi route.

PROHIBITED AREA–
(See SPECIAL USE AIRSPACE.)
(See ICAO term PROHIBITED AREA.)

PROHIBITED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

PROMINENT OBSTACLE– An obstacle that meets one or more of the following conditions:

**a.** An obstacle which stands out beyond the adjacent surface of surrounding terrain and immediately projects a noticeable hazard to aircraft in flight.

**b.** An obstacle, not characterized as low and close in, whose height is no less than 300 feet above the departure end of takeoff runway (DER) elevation, is within 10 NM from the DER, and that penetrates that airport/heliport's diverse departure obstacle clearance surface (OCS).

**c.** An obstacle beyond 10 NM from an airport/heliport that requires an obstacle departure procedure (ODP) to ensure obstacle avoidance.

(See OBSTACLE.)
(See OBSTRUCTION.)

PROPELLER (PROP) WASH (PROP BLAST)– The disturbed mass of air generated by the motion of a propeller.

PROPOSED BOUNDARY CROSSING TIME– Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

PROPOSED DEPARTURE TIME– The time that the aircraft expects to become airborne.

PROTECTED AIRSPACE– The airspace on either side of an oceanic route/track that is equal to one-half the lateral separation minimum except where reduction of protected airspace has been authorized.

PROTECTED SEGMENT- The protected segment is a segment on the amended TFM route that is to be inhibited from automatic adapted route alteration by ERAM.

PT–
(See PROCEDURE TURN.)

PTP–
(See POINT–TO–POINT.)

PTS–
(See POLAR TRACK STRUCTURE.)

PUBLIC AIRCRAFT OPERATION (PAO)– A UAS operation meeting the qualifications and conditions required for the operation of a public aircraft.

(See AC–1.1)
(See AIM)

PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT– A segment on an IAP chart annotated as "Fly Visual to Airport" or "Fly Visual." A dashed arrow will indicate the visual flight path on the profile and plan view with an associated note on the approximate heading and distance. The visual segment should be flown with flight instrumentation (when advisory lateral and vertical guidance is provided) and/or pilotage or dead reckoning navigation techniques while maintaining visual conditions.

PUBLISHED ROUTE– A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

PWS–
(See PREDICTIVE WIND SHEAR ALERT SYSTEM.)

TEMPORARY FLIGHT RESTRICTION (TFR)− A TFR is a regulatory action issued by the FAA via the U.S. NOTAM System, under the authority of United States Code, Title 49. TFRs are issued within the sovereign airspace of the United States and its territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground. While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildfire suppression, or aircraft relief activities following a disaster. TFRs may also be issued in support of VIP movements, for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. NAS users or other interested parties should contact a FSS for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at https://www.faa.gov. The FAA also distributes TFR information to aviation user groups for further dissemination.

TERMINAL AREA− A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL AREA FACILITY− A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft.
(See APPROACH CONTROL FACILITY.)
(See TOWER.)

TERMINAL AUTOMATION SYSTEMS (TAS)− TAS is used to identify the numerous automated tracking systems including STARS and MEARTS.

TERMINAL DATA LINK SYSTEM (TDLS)− A system that provides Digital Automatic Terminal Information Service (D−ATIS) both on a specified radio frequency and, for subscribers, in a text message via data link to the cockpit or to a gate printer. TDLS also provides the CPDLC Departure Clearance Application (DCL) and 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 FLIGHT DATA MANAGER (TFDM)− An integrated tower flight data automation system to provide improved airport surface and terminal airspace management. TFDM enhances traffic flow management data integration with Time−Based Flow Management (TBFM) and Traffic Flow Management System (TFMS) to enable airlines, controllers, and airports to share and exchange real−time data. This improves surface traffic management and enhances capabilities of TFMS and TBFM. TFDM assists the Tower personnel with surface Traffic Flow Management (TFM) and Collaborative Decision Making (CDM) and enables a fundamental change in the Towers from a local airport-specific operation to a NAS−connected metering operation. The single platform consolidates multiple Tower automation systems, including: Departure Spacing Program (DSP), Airport Resource Management Tool (ARMT), Electronic Flight Strip Transfer System (EFSTS), and Surface Movement Advisor (SMA). TFDM data, integrated with other FAA systems such as TBFM and TFMS, allows airlines, controllers, and airports to manage the flow of aircraft more efficiently through all phases of flight from departure to arrival gate.

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 SEQUENCING AND SPACING (TSAS)− Extends scheduling and metering capabilities into the terminal area and provides metering automation tools to terminal controllers and terminal traffic management personnel. Those controllers and traffic management personnel become active participants in time-based metering operations as they work to deliver aircraft accurately to Constraint Satisfaction Points within terminal airspace to include the runway in accordance with scheduled times at those points. Terminal controllers are better able to utilize efficient flight paths, such as Standard Instrument Approach Procedures (SIAPs) that require a

Navigational Specification (NavSpec) of RNP APCH with Radius−to−Fix (RF) legs, or Advanced RNP (A−RNP), through tools that support the merging of mixed−equipage traffic flows. For example, merging aircraft flying RNP APCH AR with RF, A−RNP, and non−RNP approach procedures. Additional fields in the flight plan will identify those flights capable of flying the RNP APCH with RF or A−RNP procedures, and those flights will be scheduled for those types of procedures when available. TSAS will schedule these and the non−RNP aircraft to a common merge point. Terminal traffic management personnel have improved situation awareness using displays that allow for the monitoring of terminal metering operations, similar to the displays used today by center traffic management personnel to monitor en route metering operations.

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.

**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 (TVOR)− 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.)

TFDM−

(See TERMINAL FLIGHT DATA MANAGER.)

TGUI–
(See TIMELINE GRAPHICAL USER INTERFACE.)

***THAT IS CORRECT–*** The understanding you have is right.

THA–
(See TRANSITIONAL HAZARD AREA.)

THE RECREATIONAL UAS SAFETY TEST (TRUST)– The electronically administered free test required for all recreational UAS operators referred to as the aeronautical knowledge and safety test, under 49 USC §44809 (g).

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.)

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 and accessible through FAA Order JO 7350.9, 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)– A foundational Decision Support Tool for time–based management in the en route and terminal environments. TBFM's core function is the ability to schedule aircraft within a stream of traffic to reach a defined constraint point (e.g., meter fix/meter arc) at specified times, creating a time-ordered sequence of traffic. The scheduled times allow for merging of traffic flows, efficiently utilizing airport and airspace capacity while minimizing coordination and reducing the need for vectoring/holding. The TBFM schedule is calculated using current aircraft estimated time of arrival at key defined constraint points based on wind forecasts, aircraft flight plan, the desired separation at the constraint point and other parameters. The schedule applies spacing only when needed to maintain the desired separation at one or more constraint points. This includes, but is not limited to, Single Center Metering (SCM), Adjacent Center Metering (ACM), En Route Departure Capability (EDC), Integrated Departure/Arrival Capability (IDAC), Ground–based Interval Management–Spacing (GIM–S), Departure Scheduling, and Extended/Coupled Metering.

TIME-BASED MANAGEMENT (TBM)– A methodology for managing the flow of air traffic through the assignment of time at specific points for an aircraft. TBM applies time to manage and condition air traffic flows to mitigate demand/capacity imbalances and enhance efficiency and predictability of the NAS. Where implemented, TBM tools will be used to manage traffic even during periods when demand does not exceed capacity. This will sustain operational predictability and assure the regional/national strategic plan is maintained. TBM uses capabilities within TFMS, TBFM, and TFDM. These programs are designed to achieve a specified interval between aircraft. Different types of programs accommodate different phases of flight.

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 must 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.

TIMELINE GRAPHICAL USER INTERFACE (TGUI)– A TBFM display that uses timelines to display the Estimated Time of Arrival and Scheduled Time of Arrival of each aircraft to specified constraint points. The TGUI can also display pre–departure and scheduled aircraft.

TIS–B–
(See TRAFFIC INFORMATION SERVICE–BROADCAST.)

TMI–
(See TRAFFIC MANAGEMENT INITIATIVE.)

TMPA–
(See TRAFFIC MANAGEMENT PROGRAM ALERT.)

TMU–
(See TRAFFIC MANAGEMENT UNIT.)

TOD–
(See TOP OF DESCENT.)

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.

TOP OF DESCENT (TOD)– The point at which an aircraft begins the initial descent.

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 takeoff 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 takeoff 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 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 (TCAS)– 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 INITIATIVE (TMI)– Tools used to manage demand with capacity in the National Airspace System (NAS.) TMIs can be used to manage NAS resources (e.g., airports, sectors, airspace) or to increase the efficiency of the operation. TMIs can be either tactical (i.e., short term) or strategic (i.e., long term), depending on the type of TMI and the operational need.

TRAFFIC MANAGEMENT PROGRAM ALERT– A term used in a Notice to Airmen (NOTAM) issued in conjunction with a special traffic management program to alert pilots to the existence of the program and to refer them to a special traffic management program advisory message for program details. The contraction TMPA is used in NOTAM text.

TRAFFIC MANAGEMENT UNIT– The entity in ARTCCs and designated terminals directly involved in the active management of facility traffic. Usually under the direct supervision of an assistant manager for traffic management.

***TRAFFIC NO FACTOR–*** Indicates that the traffic described in a previously issued traffic advisory is no factor.

***TRAFFIC NO LONGER OBSERVED–*** Indicates that the traffic described in a previously issued traffic advisory is no longer depicted on radar, but may still be a factor.

TRAFFIC PATTERN– The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are departure, upwind leg, crosswind leg, downwind leg, base leg, and final approach.

**a.** Upwind Leg– A flight path that begins after departure and continues straight ahead along the extended runway centerline. Upwind leg is an extension of departure and is used when issuing control instructions for separation, spacing or sequencing.

**b.** Crosswind Leg– A flight path at right angles to the landing runway off its upwind end.

**c.** Downwind Leg– A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.

**d.** Base Leg– A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

***NOTE–***
*ATC may instruct a pilot to report a "2-mile left base" to Runway 22. This instruction means that the pilot is expected to maneuver their aircraft into a left base leg that will intercept a straight-in final 2 miles from the approach end of Runway 22 and advise ATC.*

***REFERENCE–***
*Pilot's Handbook of Aeronautical Knowledge, FAA–H–8083–25, Chapter 14, Airport Operations, Traffic Patterns.*

**e.** Final Approach– A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

***NOTE–***
*ATC may instruct a pilot to report "5-mile final" to Runway 22. This instruction means that the pilot should maneuver their aircraft onto a straight-in final and advise ATC when they are five miles from the approach end of Runway 22.*

**f.** Departure– The flight path that begins after takeoff and continues straight ahead along the extended runway centerline. The departure climb continues until reaching a point at least 1/2 mile beyond the departure end of the runway and within 300 feet of the traffic pattern altitude.

***REFERENCE–***

*Pilot's Handbook of Aeronautical Knowledge, FAA–H–8083–25, Chapter 14, Airport Operations, Traffic Patterns.*

(See STRAIGHT-IN APPROACH VFR.)

(See TAXI PATTERNS.)

(See ICAO term AERODROME TRAFFIC CIRCUIT.)

(Refer to 14 CFR part 91.)

(Refer to AIM.)

TRAFFIC SITUATION DISPLAY (TSD)– TSD is a computer system that receives radar track data from all 20 CONUS ARTCCs, organizes this data into a mosaic display, and presents it on a computer screen. The display allows the traffic management coordinator multiple methods of selection and highlighting of individual aircraft or groups of aircraft. The user has the option of superimposing these aircraft positions over any number of background displays. These background options include ARTCC boundaries, any stratum of en route sector boundaries, fixes, airways, military and other special use airspace, airports, and geopolitical boundaries. By using the TSD, a coordinator can monitor any number of traffic situations or the entire systemwide traffic flows.

TRAJECTORY– A EDST representation of the path an aircraft is predicted to fly based upon a Current Plan or Trial Plan.

(See EN ROUTE DECISION SUPPORT TOOL.)

TRAJECTORY ALTERING CLEARANCE (TAC)– A clearance that alters altitude, speed, heading, or route.

TRAJECTORY–BASED OPERATIONS (TBO)– An Air Traffic Management method for strategically planning and managing flights throughout the operation by using Time–Based Management (TBM), information exchange between air and ground systems, and the aircraft's ability to fly trajectories in time and space. Aircraft trajectory is defined in four dimensions – latitude, longitude, altitude, and time.

TRAJECTORY MODELING– The automated process of calculating a trajectory.

TRAJECTORY OPTIONS SET (TOS)– A TOS is an electronic message, submitted by the operator, that is used by the Collaborative Trajectory Options Program (CTOP) to manage the airspace captured in the traffic management program. The TOS will allow the operator to express the route and delay trade-off options that they are willing to accept.

TRANSFER OF COMMUNICATION (TOC)– A CPDLC uplink that instructs the pilot to either contact or monitor the next air traffic radio frequency.

TRANSFER OF CONTROL– That action whereby the responsibility for the separation of an aircraft is transferred from one controller to another.

(See ICAO term TRANSFER OF CONTROL.)

TRANSFER OF CONTROL [ICAO]– Transfer of responsibility for providing air traffic control service.

TRANSFERRING CONTROLLER– A controller/facility transferring control of an aircraft to another controller/facility.

(See ICAO term TRANSFERRING UNIT/CONTROLLER.)

TRANSFERRING FACILITY–

(See TRANSFERRING CONTROLLER.)

TRANSFERRING UNIT/CONTROLLER [ICAO]– Air traffic control unit/air traffic controller in the process of transferring the responsibility for providing air traffic control service to an aircraft to the next air traffic control unit/air traffic controller along the route of flight.

Note: See definition of accepting unit/controller.

TRANSITION– The general term that describes the change from one phase of flight or flight condition to another; e.g., transition from en route flight to the approach or transition from instrument flight to visual flight.

TRANSITION POINT– A point at an adapted number of miles from the vertex at which an arrival aircraft would normally commence descent from its en route altitude. This is the first fix adapted on the arrival speed segments.

TRANSITIONAL AIRSPACE– That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRANSITIONAL HAZARD AREA (THA)– Used by ATC. Airspace normally associated with an Aircraft Hazard Area within which the flight of aircraft is subject to restrictions.
(See AIRCRAFT HAZARD AREA.)
(See CONTINGENCY HAZARD AREA.)
(See REFINED HAZARD AREA.)

TRANSMISSOMETER– An apparatus used to determine visibility by measuring the transmission of light through the atmosphere. It is the measurement source for determining runway visual range (RVR).
(See VISIBILITY.)

***TRANSMITTING IN THE BLIND–*** A transmission from one station to other stations in circumstances where two-way communication cannot be established, but where it is believed that the called stations may be able to receive the transmission.

TRANSPONDER– The airborne radar beacon receiver/transmitter portion of the Air Traffic Control Radar Beacon System (ATCRBS) which automatically receives radio signals from interrogators on the ground, and selectively replies with a specific reply pulse or pulse group only to those interrogations being received on the mode to which it is set to respond.
(See INTERROGATOR.)
(See ICAO term TRANSPONDER.)
(Refer to AIM.)

TRANSPONDER [ICAO]– A receiver/transmitter which will generate a reply signal upon proper interrogation; the interrogation and reply being on different frequencies.

TRANSPONDER CODES–
(See CODES.)

TRANSPONDER OBSERVED – Phraseology used to inform a VFR pilot the aircraft's assigned beacon code and position have been observed. Specifically, this term conveys to a VFR pilot the transponder reply has been observed and its position correlated for transit through the designated area.

TRIAL PLAN– A proposed amendment which utilizes automation to analyze and display potential conflicts along the predicted trajectory of the selected aircraft.

TRSA–
(See TERMINAL RADAR SERVICE AREA.)

TRUST–
(See THE RECREATIONAL UAS SAFETY TEST.)

TSAS–
(See TERMINAL SEQUENCING AND SPACING.)

TSD–
(See TRAFFIC SITUATION DISPLAY.)

TURBOJET AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

TURBOPROP AIRCRAFT– An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

TURBULENCE– An atmospheric phenomenon that causes changes in aircraft altitude, attitude, and or airspeed with aircraft reaction depending on intensity. Pilots report turbulence intensity according to aircraft's reaction as follows:

**a.** Light – Causes slight, erratic changes in altitude and or attitude (pitch, roll, or yaw).

**b.** Moderate– Similar to Light but of greater intensity. Changes in altitude and or attitude occur but the aircraft remains in positive control at all times. It usually causes variations in indicated airspeed.

**c.** Severe– Causes large, abrupt changes in altitude and or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

**d.** Extreme– The aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

(See CHOP.)

(Refer to AIM.)

TURN ANTICIPATION– (maneuver anticipation).

TVOR–

(See TERMINAL-VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE STATION.)

TWO-WAY RADIO COMMUNICATIONS FAILURE–

(See LOST COMMUNICATIONS.)

# U

UAM–
(See URBAN AIR MOBILITY.)

UAP–
(See UNIDENTIFIED ANOMALOUS PHENOMENA.)

UAS FACILITY MAP (UASFM)– Defined grid squares showing maximum altitudes around airports where the FAA may authorize part 107 sUAS operations without additional safety analysis. The maps should be consulted prior to conducting UAS operations (part 91, part 107 or section 44809) in controlled airspace. The UASFM will aid in determining if the airspace authorization or waivers are necessary. UASFM(s) are charted on the UAS Data Delivery System (UDDS) at the following website address:
https://faa.maps.arcgis.com/apps/webappviewer/index.html?id=9c2e4406710048e19806ebf6a06754ad.

UAS TEST SITE– Independently owned UAS test & research sites, recognized by the FAA.

UAS TRAFFIC MANAGEMENT (UTM)–The unmanned aircraft traffic management ecosystem that will allow multiple low altitude BVLOS operations and which is separate from, but complementary to, FAA's Air Traffic Control System.

UASFM–
(See UAS FACILITY MAP.)

UHF–
(See ULTRAHIGH FREQUENCY.)

ULTRAHIGH FREQUENCY (UHF)– 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, or 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.)

UNCONTROLLED AIRSPACE– Airspace in which aircraft are not subject to controlled airspace (Class A, B, C, D, or E) separation criteria.

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.)
(Refer to AIM.)

UNIDENTIFIED ANOMALOUS PHENOMENA (UAP)– For aviation reporting purposes, a UAP may be airborne objects or other detected/observed objects that are not immediately identifiable, such as balloons, aircraft, or natural known phenomena, that demonstrate behaviors that are not readily understood by sensors or observers. A UAP may consist of one or more unidentified anomalous objects and may persist over an extended period of time. The full definition of UAP may be found on the All-Domain Anomaly Resolution Office (AARO) website at https://www.aaro.mil.

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.

UNSERVICEABLE (U/S)
(See OUT OF SERVICE/UNSERVICEABLE.)

UPLINK– CPDLC message sent from ATC to the flight deck.

UPWIND LEG–
(See TRAFFIC PATTERN.)

URBAN AIR MOBILITY (UAM)– A subset of Advanced Air Mobility (AAM), referring to an air transportation system utilizing highly automated aircraft to transport passengers or cargo in urban/suburban areas.

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.)

UTM–
(See UAS TRAFFIC MANAGEMENT.)

# W

WA–
(See AIRMET.)
(See WEATHER ADVISORY.)

WAAS–
(See WIDE-AREA AUGMENTATION SYSTEM.)

WAKE TURBULENCE– A phenomenon that occurs when an aircraft develops lift and forms a pair of counter-rotating vortices.
(See AIRCRAFT CLASSES.)
(See AIRCRAFT WAKE CATEGORIES.)
(See VORTICES.)
(Refer to AIM.)

WARNING AREA–
(See SPECIAL USE AIRSPACE.)

WAYPOINT– A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

WEATHER ADVISORY– In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the Aviation Surface Forecast, Aviation Cloud Forecast, or area forecast, as they affect the operation of air traffic and as prepared by the NWS.
(See AIRMET.)
(See GRAPHICAL AIRMEN'S METEOROLOGICAL INFORMATION.)
(See SIGMET.)

WEATHER RADAR PRECIPITATION INTENSITY– Existing radar systems cannot detect turbulence, however, there is a direct correlation between turbulence intensity and precipitation intensity. Controllers must issue all precipitation displayed on their user display systems. When precipitation intensity is not available, controllers will report intensity as UNKNOWN. When precipitation intensity levels are available, they will be described as follows:

**a.** LIGHT (< 26 dBZ)

**b.** MODERATE (26 to 40 dBZ)

**c.** HEAVY (> 40 to 50 dBZ)

**d.** EXTREME (> 50 dBZ)

WEATHER RECONNAISSANCE AREA (WRA)– A WRA is airspace with defined dimensions and published by Notice to Airmen, which is established to support weather reconnaissance/research flights. Air traffic control services are not provided within WRAs. Only participating weather reconnaissance/research aircraft from the 53rd Weather Reconnaissance Squadron and National Oceanic and Atmospheric Administration Aircraft Operations Center are permitted to operate within a WRA. A WRA may only be established in airspace within U.S. Flight Information Regions outside of U.S. territorial airspace.

***WHEN ABLE–***

**a.** In conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply.

**b.** In conjunction with a weather deviation clearance, requires the pilot to determine when he/she is clear of weather, then execute ATC instructions.

**c.** Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

WIDE-AREA AUGMENTATION SYSTEM (WAAS)– The WAAS is a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

WIDE AREA MULTILATERATION (WAM)– A distributed surveillance technology which may utilize any combination of signals from Air Traffic Control Radar Beacon System (ATCRBS) (Modes A and C) and Mode S transponders, and ADS-B transmissions. Multiple geographically dispersed ground sensors measure the time-of-arrival of the transponder messages. Aircraft position is determined by joint processing of the time-difference-of-arrival (TDOA) measurements computed between a reference and the ground stations' measured time-of-arrival.

***WILCO–*** I have received your message, understand it, and will comply with it.

WIND GRID DISPLAY– A display that presents the latest forecasted wind data overlaid on a map of the ARTCC area. Wind data is automatically entered and updated periodically by transmissions from the National Weather Service. Winds at specific altitudes, along with temperatures and air pressure can be viewed.

WIND SHEAR– A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

WIND SHEAR ESCAPE– An unplanned abortive maneuver initiated by the pilot in command (PIC) as a result of onboard cockpit systems. Wind shear escapes are characterized by maximum thrust climbs in the low altitude terminal environment until wind shear conditions are no longer detected.

WING TIP VORTICES–
(See VORTICES.)

***WORDS TWICE–***

**a.** As a request: "Communication is difficult. Please say every phrase twice."

**b.** As information: "Since communications are difficult, every phrase in this message will be spoken twice."

WS–
(See SIGMET.)
(See WEATHER ADVISORY.)

WST–
(See CONVECTIVE SIGMET.)
(See WEATHER ADVISORY.)

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# W

# BRIEFING GUIDE

**U.S. DEPARTMENT OF TRANSPORTATION**
**FEDERAL AVIATION ADMINISTRATION**

**Initiated By: AJV−0**
**Vice President, Mission Support Services**

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**2. BACKGROUND:** The Controller Pilot Data Link Communications (CPDLC) capability is in use in all FAA Air Route Traffic Control Centers and at select airports 24 hours a day dictating the need to move CPDLC policies and procedures currently placed in FAA Order JO 7110.125, Controller Pilot Data Link Communications (CPDLC) in the ERAM Environment, and FAA Order JO 7110.113, Procedures for Issuing Automated Clearances, into FAA Order JO 7110.65.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1–2–6. ABBREVIATIONS** | **1–2–6. ABBREVIATIONS** |
| As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1–2–1.) | No Change |
| ***TBL 1–2–1*** **FAA Order JO 7110.65 Abbreviations** | No Change |
| Add | **CAA . . . . . Confirm assigned altitude** |
| Add | **DCL . . . . . Departure Clearance** |
| Add | **IC . . . . . Initial contact** |
| Add | **OMIC . . . . . Operations Manager-in-Charge** |
| Add | **PID . . . . . Pilot initiated downlink** |
| Add | **TAC . . . . . Trajectory altering clearance** |
| Add | **TO . . . . . Technical Operations** |
| Add | **TOC . . . . . Transfer of communication** |

**OLD**

**3–9–2. DEPARTURE DELAY INFORMATION**

USA/USAF/USN NOT APPLICABLE

When gate-hold procedures are in effect, issue the following departure delay information as appropriate:

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–3, Gate Hold Procedures.*

**NEW**

**3–9–2. DEPARTURE DELAY INFORMATION**

No Change

No Change

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–7, Gate Hold Procedures.*

**OLD**

**4–8–11. PRACTICE INSTRUMENT APPROACHES**

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

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

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

**NEW**

**4–8–11. PRACTICE INSTRUMENT APPROACHES**

No Change

No Change

***REFERENCE–***
*FAA Order JO 7210.3, Para 6–4–4, Practice Instrument Approaches.*
*FAA Order JO 7210.3, Para 10–4–**9**, Practice Instrument Approaches.*

**OLD**

**5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE**

**Title** through **a1(a)**

**(b)** until aircraft are established on a published segment of an approach authorized for Established on RNP (EoR) operations.

***NOTE–***
Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway.

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–6, Simultaneous Independent Approaches.*
*P/CG Term – Required Navigation Performance (RNP).*
*P/CG Term – Established on RNP Concept.*

**NEW**

**5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE**

No Change

No Change

No Change

***REFERENCE–***
*FAA Order JO 7210.3, Para 10–4–**10**, Simultaneous Independent Approaches.*
*P/CG Term – Required Navigation Performance (RNP).*
*P/CG Term – Established on RNP Concept.*

| | |
|---|---|
| **a2** through **c3** ***NOTE*** | No Change |
| **d.** The following conditions must be met when conducting dual or triple simultaneous independent approaches: | No Change |
| ***NOTE–***<br>Simultaneous independent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches. | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7210.3, Para 10-4-6, Simultaneous Approaches (Dependent/Independent).* | ***REFERENCE–***<br>*FAA Order JO 7210.3, Para 10–4–**10**, Simultaneous **Independent** Approaches.* |

| **OLD** | **NEW** |
|---|---|
| **5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)** | **5–9–9. SIMULTANEOUS OFFSET INSTRUMENT APPROACHES (SOIA)** |
| **Title** through **g3** | No Change |
| **4.** Issue all applicable wake turbulence advisories. | No Change |
| ***REFERENCE–***<br>*FAA Order JO 8260.49, Para 13.0, Wake Turbulence Requirements.*<br>*FAA Order JO 7210.3, Para 10–4–6, Simultaneous Independent Approaches.*<br>*FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.*<br>*FAA Order JO 7110.65, Para 5–5–4, Minima.* | ***REFERENCE–***<br>*FAA Order JO 8260.49, Para 13.0, Wake Turbulence Requirements.*<br>*FAA Order JO 7210.3, Para 10–4–**10**, Simultaneous Independent Approaches.*<br>*FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.*<br>*FAA Order JO 7110.65, Para 5–5–4, Minima.* |

| **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 **b1(a)** | No Change |
| **(b)** conducting EoR operations, until aircraft are established on a published segment of an approach authorized for EoR operations. | No Change |
| ***NOTE–***<br>Aircraft are considered EoR on an initial or intermediate segment of an instrument approach authorized for EoR operations after the approach clearance has been issued, read back by the pilot and the aircraft is observed on the published procedure (lateral and vertical path, and within any procedure specified speed restriction), and is conducting a simultaneous independent parallel approach with an authorized simultaneous instrument approach to a parallel runway. | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7210.3, Para 10-4-7, Simultaneous Widely-Spaced Parallel Operations.*<br>*P/CG Term – Required Navigation Performance (RNP).*<br>*P/CG Term – Established on RNP Concept.* | ***REFERENCE–***<br>*FAA Order JO 7210.3, Para 10–4–**11**, Simultaneous Widely-Spaced Parallel Operations.*<br>*P/CG Term – Required Navigation Performance (RNP).*<br>*P/CG Term – Established on RNP Concept.* |

| OLD | NEW |
|---|---|
| Add | **Chapter 14. Data Link Communications** |

| OLD | NEW |
|---|---|
| Add | **Section 1. Terminal Procedures for Issuing Automated Clearances** |

| OLD | NEW |
|---|---|
| Add | **14–1–1. PRE-DEPARTURE CLEARANCE (PDC)** |
| Add | **a. PDC must be utilized in accordance with this order and the local facility directive for transmitting automated clearances developed in accordance with FAA Order JO 7210.3, Facility Operation and Administration.** |
| Add | **b. Review all clearances for accuracy and route integrity.** |
| Add | **c. Ensure all information is complete and understandable to the recipient, and the route of flight is continuous.** |
| Add | **d. PDC does not permit amended or revised flight plans to be transmitted. Revised or amended flight plans require the clearance to be verbally issued to the flight crew.** |
| Add | ***NOTE–***<br>***A flight plan that initially generates in the tower, with a route assigned by automation, (for example: ADR) is not considered revised or amended and may be transmitted.*** |
| Add | **e. PDC information must be operational in nature. All selectable fields will be predefined by the Terminal Automation System (TAS) and available from a drop-down menu.** |
| Add | **f. For a minimum of 60 days following the commissioning of a Terminal Data Link System (TDLS), the facility Automatic Terminal Information Service (ATIS) must broadcast that PDC is available.** |

| OLD | NEW |
|---|---|
| Add | **14–1–2. CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC) – DEPARTURE CLEARANCE (DCL)** |
| Add | **a. CPDLC DCL must be utilized in accordance with this order and the local facility directive for transmitting automated clearances developed in accordance with FAA Order JO 7210.3, Facility Operation and Administration.** |

| | |
|---|---|
| Add | **b. All clearances must be reviewed for accuracy and route integrity. Action must be taken to ensure all information is complete and understandable to the recipient, and the route of flight is continuous.** |
| Add | **c. CPDLC permits amended or revised flight plans to be transmitted. Revised or amended flight plans that cannot be delivered using CPDLC must be verbally issued to the flight crew.** |
| Add | **d. CPDLC clearance information must be operational in nature. All selectable fields will be predefined by the TAS and available from a drop-down menu.** |
| Add | **e. For a minimum of 60 days following the commissioning of a CPDLC capability, the facility ATIS must broadcast that CPDLC is available.** |

| OLD | NEW |
|---|---|
| Add | **14–1–3. DEPARTURE CLEARANCE (DCL) APPLICATION (PDC/CPDLC) SELECTABLE FIELDS** |
| Add | **a. The DCL application provides up to nine Selectable Fields for the tower controller to enter all other clearance information. Each Selectable Field has a purpose and should only be used for that purpose. For standardization, facilities must use DCL Application Selectable Fields as follows:** |
| Add | **1. Selectable Field 1, SID Field, must contain:** |
| Add | **(a) the correctly filed SID, or** |
| Add | **(b) the SID assigned by the EAS, or** |
| Add | **(c) if No SID is filed or assigned by EAS, the controller must either select a SID or, if no SID is to be assigned, select the "NO SID" option.** |
| Add | **2. Selectable Field 2, Transition Field, is reserved for named Transitions on DPs. Selectable Field 2 must contain:** |
| Add | **(a) the correctly filed Transition, or** |
| Add | **(b) the Transition assigned by the EAS, or** |
| Add | **(c) if No Transition is filed or assigned by EAS, the controller must either select a Transition or, if no Transition is to be assigned, select the "––––" option.** |

Add **3. Selectable Field 3, Climb Out Field, is reserved for climb related information, such as heading assignments, expected vector assignments, or defined SID climbs. Climb Out Field instructions must never contradict SID instructions and may reiterate pertinent SID information. This field is limited to 32 characters and only those entries adapted by the TAS will be available for selection.**

Add **4. Selectable Field 4, CLIMB VIA Field, is reserved for use when a SID is assigned or selected, and will contain CLIMB VIA SID or CLIMB VIA SID EXCEPT MAINTAIN (altitude) information as follows:**

Add **(a) If the assigned SID contains vertical guidance from take-off to climb to an altitude to maintain, and it is intended that an aircraft vertically navigate in accordance with the SID assigned or entered in Selectable Field 1, then Selectable Field 4 must contain the instruction "CLIMB VIA SID", or**

Add **(b) If the assigned SID does not have an initial altitude to maintain, but contains vertical guidance, and it is intended that an aircraft vertically navigate in accordance with the SID assigned or entered in Selectable Field 1, then Selectable Field 4 must contain the instruction "CLIMB VIA SID EXCEPT MAINTAIN (altitude)", or**

Add **(c) If the assigned altitude is different from the published altitude in the SID, the altitude may be amended using CLIMB VIA SID EXCEPT MAINTAIN (altitude).**

Add **5. Selectable Field 5, Maintain Altitude Field, is reserved for initial altitude Assignment. If no SID is assigned or the assigned SID does not contain either an initial altitude or vertical guidance, then Selectable Field 5 must contain the instruction "MAINTAIN (assigned altitude)".**

Add **6. Selectable Field 6, Expected Altitude Field, is reserved for specifying when the Expected Altitude would be used in the event of lost communications.**

Add **7. Selectable Field 7, Departure Frequency Field, is reserved for Departure Control Frequency Assignment. The selection of "SEE SID" may be used if the SID contains Departure Control Frequency Assignment specific to the intended departure procedure.**

| | |
|---|---|
| Add | **8. Selectable Field 8, Contact Field, is reserved for additional contact information in accordance with facility directives. This field is limited to 32 characters.** |
| Add | **9. Selectable Field 9, Local Information Field, is reserved for additional information in accordance with facility directives. This field is limited to 34 characters and must not contradict information contained elsewhere in a departure clearance.** |

| OLD | NEW |
|---|---|
| Add | **Section 2. En Route Controller Pilot Data Link Communications (CPDLC) – Domestic** |
| Add | ***NOTE–***<br>***Controller Pilot Data Link Communications (CPDLC) messages in use in domestic en route operations are contained in TBL 14–2–1 through TBL 14–2–23.*** |

| OLD | NEW |
|---|---|
| Add | **14–2–1. GENERAL** |
| Add | **a. The use of CPDLC is approved to augment the voice communication requirements of FAA Order JO 7110.65 for all altitudes, routes, speeds, holding clearances, altimeters, advisories, and frequency changes.** |
| Add | **b. The sector team is responsible for sending and responding to CPDLC messages.** |
| Add | **c. Controllers should minimize the use of CPDLC during critical phases of flight.** |
| Add | **d. CPDLC should not be used to issue immediate or expeditious clearances unless voice communication is not operationally feasible.** |
| Add | **e. Ensure there are no trajectory altering clearances (TAC) open prior to transfer of communication unless otherwise coordinated.** |
| Add | **f. Use of the automated Voice Communication Indicator (VCI) during CPDLC operations complies with the requirements of FAA Order JO 7110.65 paragraph 2–1–17, Radio Communications.** |
| Add | **g. Unless otherwise coordinated, the last controller working the aircraft before it exits the continental United States (U.S.) must ensure the CPDLC connection is terminated upon transfer of communication to any non-U.S. facility or Advanced Technologies and Oceanic Procedures (ATOP) sector.** |

| | |
|---|---|
| Add | **h. Coordination must be accomplished with the sector with eligibility prior to terminating a CPDLC connection from any other position or adapted air traffic workstation.** |
| Add | **i. In the event of receipt of an emergency pilot initiated downlink (PID), follow the provisions of FAA Order JO 7110.65, Chapter 10, Emergencies.** |
| Add | **j. When responding to a PID for a weather deviation request via CPDLC, and the aircraft has a clearance to climb/descend via or has a crossing restriction, the controller must unable the request and revert to voice communications.** |
| Add | ***NOTE–***<br>***After a climb via or descend via clearance has been issued, a vector/deviation off 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 published top or bottom altitude.*** |
| Add | ***REFERENCE–***<br>***FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments.*** |

| OLD | NEW |
|---|---|
| Add | **14–2–2. ABNORMAL SITUATIONS** |
| Add | **a. When an Initial Contact (IC) mismatch or confirm assigned altitude (CAA) downlink time-out indicator is displayed in the full data block (FDB) and ACL, the controller who has the aircraft on their voice frequency must use voice communication to verify the assigned altitude of the aircraft and acknowledge the IC mismatch/time-out indicator.** |
| Add | ***NOTE–***<br>***All sectors in the controlling ARTCC displaying an FDB will show the IC mismatch/time-out indicator.*** |
| Add | **b. Abnormal CPDLC indications must be acknowledged by the controller only after required coordination has been performed.** |
| Add | **c. Use voice communications when overriding an open CPDLC clearance and issuing alternate control instructions. If the CPDLC clearance contains multiple elements, the entire clearance must be restated.** |
| Add | ***PHRASEOLOGY–***<br>***DISREGARD CPDLC (type) CLEARANCE (description of clearance) AND SEND AN UNABLE (alternate clearance).*** |

Add

***EXAMPLE–***
***"American Fifty-Two, disregard CPDLC altitude clearance to flight level three five zero and send an unable. Climb and maintain flight level three one zero."***
***"Delta Four Twenty-Three, disregard CPDLC route clearance direct Memphis and send an unable. Cleared direct Nashville, direct Memphis, rest of route unchanged."***
***"United Thirty-Two, disregard CPDLC hold clearance at JKSON and send an unable. Cleared to Atlanta airport via direct JKSON GLAVN one, maintain flight level three three zero."***
***"Alaska Ten, disregard CPDLC crossing and speed clearance at EMZOH and send an unable. Cross EMZOH at and maintain flight level two eight zero at two five zero knots."***

Add

***NOTE–***
***Controllers should be aware that the CPDLC clearance being overridden may not have been received on the flight deck at the time of the voice communication. This phraseology tells the pilot exactly which clearance requires an UNABLE response.***

Add

**d. Controllers may cancel an open uplink only after ensuring the pilot has been issued and acknowledged, via voice communication, the superseding ATC clearance.**

Add

***NOTE–***
**1.** ***The provisions of this paragraph are not intended to replace the requirements to override a CPDLC clearance as stipulated in paragraph 14–2–3.***

Add

**2.** ***Canceling an uplink only removes the uplink from the CPDLC ground system. The uplink remains open on the flight deck. Controllers must instruct the pilot to respond with an unable to close the uplink on the flight deck.***

Add

**3.** ***The ability to cancel an uplink is only provided to allow controllers to clear open uplink indications in the FDB and ACL. Clearing these indications allows controllers to continue CPDLC operations with the affected aircraft.***

Add

**e. For No Radio (NORDO) aircraft with an active CPDLC connection:**

Add

**1. It is permissible for the sector with eligibility to mark the aircraft on frequency to allow CPDLC communications with that aircraft.**

Add

**2. Use procedures in FAA Order JO 7110.65, paragraphs 5–2–4, Radio Failure, and 10–4–4, Communications Failure, for all CPDLC aircraft that experience a two-way voice radio communications failure.**

| OLD | NEW |
|---|---|
| Add | **14–2–3. SYSTEM SITUATIONS** |
| Add | **a. If the CPDLC system fails to provide a necessary automated altimeter setting to an aircraft, the controller must issue an altimeter setting in accordance with FAA Order JO 7110.65, Chapter 2, Section 7, Altimeter Settings.** |
| Add | ***NOTE–***<br>***If the CPDLC system fails to provide an automated altimeter setting, the controller with eligibility will be notified with an abnormal indication in the FDB. Automated altimeters are only sent in response to a monitor transfer of communication (TOC), or an altitude uplink when the assigned altitude is below FL 180.*** |
| Add | **b. When a CPDLC connection is unexpectedly lost with an aircraft, and voice communication had not previously been established, the controller must ensure voice communication is established and maintained with that aircraft.** |
| Add | **c. Whenever there is a shutdown or failure of CPDLC service:** |
| Add | **1. Controllers must use voice to broadcast a message alerting pilots to the shutdown and request no pilot downlinks until further advised.** |
| Add | ***EXAMPLE–***<br>***"Attention all aircraft; CPDLC no longer in use. Do not downlink any messages until further advised."*** |
| Add | **2. Controllers must take action to ensure that any open or abnormally closed uplinks at the time of the shutdown are resolved, by voice, with each aircraft.** |

| OLD | NEW |
|---|---|
| Add | **14–2–4. SPECIFIC UPLINKS** |
| Add | **a. Advisory Messages** |
| Add | **1. Control instructions and messages that require an acknowledgement from the aircraft must not be issued via advisory/free text messages.** |
| Add | **2. When using abbreviations to compose weather related or advisory/free text messages, comply with FAA Order JO 7340.2, Contractions.** |

Add

***NOTE–***
***Some common meteorological abbreviations:***
***1. Extreme = EXTRM***
***2. Severe = SEV***
***3. Heavy = HVY***
***4. Moderate = MOD***
***5. Light = LGT***
***6. Turbulence = TURB***
***7. Continuous = CONS***
***8. Occasional = OCNL***
***9. Intermittent = INTMT***

Add

**b. Speeds**

Add

**1. When using CPDLC to issue a speed assignment to an aircraft at or above FL 390, the WILCO response satisfies the requirement in JO 7110.65, 5–7–2b, regarding pilot concurrence.**

Add

**2. CPDLC must not be used to issue a speed adjustment to an aircraft established on a route or procedure that has published speed restrictions.**

Add

**c. Holding**

Add

**1. CPDLC must not be used to clear an aircraft out of holding.**

Add

***NOTE–***
***Because a route uplink does not specify a new clearance limit, clearing an aircraft out of holding must be done via voice.***

Add

**2. If an aircraft has a clearance to climb/descend via, holding instructions must not be issued via CPDLC.**

Add

***NOTE–***
***The vertical navigation portion of the procedure must be canceled prior to using CPDLC to issue holding instructions.***

**OLD**

Add

**NEW**

***TBL 14−2−1***

**Response Attribute of CPDLC Message Element**

| Response Attribute | Description |
|---|---|
| | **For Uplink Message** |
| **W/U** | **Response required.**<br>**Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR**<br>**NOTE– WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.**<br>**FANS 1/A.— WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.** |
| **A/N** | **Response required.**<br>**Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR**<br>**NOTE– AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.**<br>**FANS 1/A.— AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY** |
| **R** | **Response required.**<br>**Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR**<br>**NOTE– ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.**<br>**FANS 1/A.— ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS 1/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an "R" response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction.** |
| **Y** | **Response required.**<br>**Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required).** |
| **N** | **No response required unless logical acknowledgement is required.**<br>**Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR**<br>**FANS 1/A.— "N" is defined as "no response is required," but not used. Under some circumstances, an ERROR message will also close an uplink message.** |

| | |
|---|---|
| **NE** | **[Not defined in Doc 4444]**<br>**FANS 1/A.— The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute.** |
| **For Downlink Message** | |
| **Y** | **Response required. Yes**<br>**Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required).** |
| **N** | **Response required. No, unless logical acknowledgement required.**<br>**Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR**<br>**FANS 1/A.— Aircraft do not have the capability to receive technical responses to downlink message elements with an "N" response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS 1/A aircraft and Doc 4444. As an example, most emergency messages have an "N" response attribute for FANS 1/A whereas Doc 4444 defines a "Y" response attribute for them. As a consequence, for FANS 1/A aircraft, ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received.** |

***TBL 14–2–2***

**Route Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM74** | **PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed directly to the specified position.** |
| **UM75** | **WHEN ABLE PROCEED DIRECT TO (*position*)**<br>***NOTE– This message element is equivalent to SUPU–5 plus RTEU–2 in Doc 4444.*** | **W/U** | **Instruction to proceed directly to the specified position.** |
| **UM77** | **AT (*position*) PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed, at the specified position, directly to the next specified position.** |
| **UM78** | **AT *(altitude)* PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed directly to the specified position upon reaching the specified altitude.** |
| **UM79** | **CLEARED TO (*position*) VIA (*route clearance*)** | **W/U** | **Instruction to proceed to the specified position via the specified route.** |
| **UM80** | **CLEARED (*route clearance*)** | **W/U** | **Instruction to proceed via the specified route.** |
| **UM83** | **AT (*position*) CLEARED (*route clearance*)** | **W/U** | **Instruction to proceed from the specified position via the specified route.** |
| **UM91** | **HOLD AT (*position*) MAINTAIN *(altitude)* INBOUND TRACK (*degrees*) (*direction*) TURN LEG TIME (*leg type*)** | **W/U** | **Instruction to enter a holding pattern at the specified position in accordance with the specified instructions.**<br>***NOTE– RTEU–13 EXPECT FURTHER CLEARANCE AT (time) is appended to this message when an extended hold is anticipated.*** |

| | | | |
|---|---|---|---|
| **UM92** | **HOLD AT (*position*) AS PUBLISHED MAINTAIN *(altitude)*** | **W/U** | **Instruction to enter a holding pattern at the specified position in accordance with the published holding instructions.**<br>***NOTE– RTEU–13 EXPECT FURTHER CLEARANCE AT TIME (time) is appended to this message when an extended hold is anticipated.*** |
| **UM93** | **EXPECT FURTHER CLEARANCE AT (*time*)** | **W/U** | **Notification that an onwards clearance may be issued at the specified time.** |
| **UM137** | **CONFIRM ASSIGNED ROUTE**<br>***NOTE– NE response attribute.*** | **Y** | **Request to confirm the assigned route.** |

***TBL 14–2–3***

**Route Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **DM22** | **REQUEST DIRECT TO (*position*)** | **Y** | **Request for a direct clearance to the specified position.** |
| **DM23** | **REQUEST (*procedure name*)** | **Y** | **Request for the specified procedure or clearance name.** |
| **DM24** | **REQUEST (*route clearance*)** | **Y** | **Request for the specified route.** |
| **DM40** | **ASSIGNED ROUTE (*route clearance*)** | **N** | **Confirmation that the assigned route is the specified route.** |

***TBL 14–2–4***

**Lateral Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM82** | **CLEARED TO DEVIATE UP TO (*distance offset*) (*direction*) OF ROUTE** | **W/U** | **Instruction allowing deviation up to the specified distance(s) from the cleared route in the specified direction(s).** |
| **UM127** | **REPORT BACK ON ROUTE**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report when the aircraft is back on the cleared route.** |

*TBL 14−2−5*

**Lateral Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM27 | REQUEST WEATHER DEVIATION UP TO (*specified distance*) (*direction*) OF ROUTE | Y | Request for a weather deviation up to the specified distance(s) off track in the specified direction(s). |
| DM41 | BACK ON ROUTE | N | Report indicating that the cleared route has been rejoined. |
| DM59 | DIVERTING TO (*position*) VIA (*route clearance*)<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating diverting to the specified position via the specified route, which may be sent without any previous coordination done with ATC. |
| DM60 | OFFSETTING (*distance offset*) (*direction*) OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating that the aircraft is offsetting to a parallel track at the specified distance in the specified direction off from the cleared route. |
| DM80 | DEVIATING (*deviation offset*) (*direction*) OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N<br>See Note | Report indicating deviating specified distance or degrees in the specified direction from the cleared route. |

*NOTE−*
*ICAO Document 10037, Global Operational Data Link (GOLD) Manual, has these values set to Y in their table.*

*TBL 14−2−6*

**Altitude Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM19 | MAINTAIN *(altitude)* | W/U | Instruction to maintain the specified altitude. |
| UM20 | CLIMB TO AND MAINTAIN *(altitude)* | W/U | Instruction that a climb to the specified altitude is to commence and once reached is to be maintained. |
| UM23 | DESCEND TO AND MAINTAIN *(altitude)* | W/U | Instruction that a descent to the specified altitude is to commence and once reached is to be maintained. |
| UM30 | MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction to maintain the specified vertical range. |
| UM31 | CLIMB TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction that a climb to the specified vertical range is to commence and once reached is to be maintained. |
| UM32 | DESCEND TO AND MAINTAIN BLOCK *(altitude)* TO *(altitude)* | W/U | Instruction that a descent to the specified vertical range is to commence and once reached is to be maintained. |
| UM36 | EXPEDITE CLIMB TO *(altitude)*<br>*NOTE− This message element is equivalent to SUPU−3 plus LVLU−6 in Doc 4444.* | W/U | Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained. |

| | | | |
|---|---|---|---|
| **UM37** | **EXPEDITE DESCENT TO** ***(altitude)*** | **W/U** | **Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM38** | **IMMEDIATELY CLIMB TO** ***(altitude)***<br>***NOTE– This message element is equivalent to EMGU–2 plus LVLU–6 in Doc 4444.*** | **W/U** | **Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM39** | **UM39 IMMEDIATELY DESCEND TO** ***(altitude)***<br>***NOTE– This message element is equivalent to EMGU–2 plus LVLU–9 in Doc 4444.*** | **W/U** | **Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM135** | **CONFIRM ASSIGNED ALTITUDE**<br>***NOTE– NE response attribute.*** | **Y** | **Request to confirm the assigned altitude.** |
| **UM177** | **AT PILOTS DISCRETION**<br>**See Note** | **NE** | **An instruction used in conjunction with altitude assignments, means that ATC has offered the pilot the option of starting climb or descent whenever they wish and conducting the climb or descent at any rate they wish. The pilot may temporarily level off at any intermediate altitude. However, once the aircraft has vacated an altitude, it may not return to that altitude.** |

***NOTE–***
***ICAO Document 10037, Global Operational Data Link (GOLD) Manual, does not include this in its tables.***

***TBL 14–2–7***

**Altitude Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| **DM6** | **REQUEST** ***(altitude)*** | **Y** | **Request to fly at the specified altitude.** |
| **DM7** | **REQUEST BLOCK** ***(altitude)*** **TO** ***(altitude)*** | **Y** | **Request to fly at the specified vertical range.** |
| **DM9** | **REQUEST CLIMB TO** ***(altitude)*** | **Y** | **Request for a climb to the specified level or vertical range.** |
| **DM10** | **REQUEST DESCENT TO** ***(altitude)*** | **Y** | **Request for a descent to the specified level or vertical range.** |
| **DM38** | **ASSIGNED ALTITUDE** ***(altitude)*** | **N** | **Confirmation that the assigned altitude is the specified altitude or vertical range.** |
| **DM61** | **DM61 DESCENDING TO (altitude)**<br>***NOTE– Urgent alert attribute.*** | **N** | **Report indicating descending to the specified altitude.** |
| **DM77** | **DM77 ASSIGNED BLOCK** ***(altitude)*** **TO** ***(altitude)*** | **N** | **Confirmation that the assigned vertical range is the specified vertical range.** |

*TBL 14−2−8*

**Crossing Constraint Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM46 | CROSS (*position*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM49 | CROSS (*position*) AT AND MAINTAIN (*altitude*)<br>*NOTE− This message element is equivalent to CSTU−1 plus LVLU−5 in Doc 4444.* | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM51 | CROSS (*position*) AT (*time*) | W/U | Instruction that the specified position is to be crossed at the specified time. |
| UM52 | CROSS (*position*) AT OR BEFORE (*time*) | W/U | Instruction that the specified position is to be crossed before the specified time. |
| UM53 | CROSS (*position*) AT OR AFTER (*time*) | W/U | Instruction that the specified position is to be crossed after the specified time. |
| UM55 | CROSS (*position*) AT (*speed*) | W/U | Instruction that the specified position is to be crossed at the specified speed. |
| UM56 | CROSS (*position*) AT OR LESS THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or less than the specified speed. |
| UM57 | CROSS (*position*) AT OR GREATER THAN (*speed*) | W/U | Instruction that the specified position is to be crossed at or greater than the specified speed. |
| UM61 | CROSS (*position*) AT AND MAINTAIN (*altitude*) AT (*speed*)<br>*NOTE− This message element is equivalent to CSTU−14 plus LVLU−5 in Doc 4444.* | W/U | Instruction that the specified position is to be crossed at the specified altitude and speed. |

*TBL 14−2−9*

**Speed Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM106 | MAINTAIN (*speed*) | W/U | Instruction to maintain the specified speed. |
| UM107 | MAINTAIN PRESENT SPEED | W/U | Instruction to maintain the present speed. |
| UM108 | MAINTAIN (*speed*) OR GREATER | W/U | Instruction to maintain the specified speed or greater. |
| UM109 | MAINTAIN (*speed*) OR LESS | W/U | Instruction to maintain the specified speed or less. |
| UM116 | RESUME NORMAL SPEED | W/U | Instruction to resume a normal speed. The aircraft no longer needs to comply with a previously issued speed restriction. |
| UM134 | CONFIRM SPEED<br>*NOTE− NE response attribute.* | Y | Request to report the speed defined by the speed type(s). |

***TBL 14−2−10***

**Speed Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM34 | PRESENT SPEED (*speed*) | N | Report indicating the speed defined by the specified speed types is the specified speed. |

***TBL 14−2−11***

**Air Traffic Advisory Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM154 | RADAR SERVICES TERMINATED | R | Advisory that the ATS surveillance service is terminated. |

***TBL 14−2−12***

**Voice Communications Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM117 | CONTACT (*ICAO unit name*) (*frequency*) | W/U | Instruction to establish voice contact with the specified ATS unit on the specified frequency. |
| UM120 | MONITOR (*ICAO unit name*) (*frequency*) | W/U | Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency. |

***TBL 14−2−13***

**Voice Communications Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM20 | REQUEST VOICE CONTACT<br>*NOTE− Used when a frequency is not required.* | Y | Request for voice contact on the specified frequency. |

*TBL 14−2−14*

**Emergency/Urgency Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM38 | IMMEDIATELY CLIMB TO (*altitude*)<br>Used in combination with LVLU−6 and LVLU−9, which is implemented in FANS 1/A as above | Y | Instruction to immediately comply with the associated instruction to avoid imminent situation. |
| UM39 | IMMEDIATELY DESCEND TO (*altitude*)<br>Used in combination with LVLU−6 and LVLU−9, which is implemented in FANS 1/A as above | Y | Instruction to immediately comply with the associated instruction to avoid imminent situation. |

*TBL 14−2−15*

**Emergency/Urgency Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM55 | PAN PAN PAN<br>*NOTE− N response attribute.* | Y | Indication of an urgent situation. |
| DM56 | MAYDAY MAYDAY MAYDAY<br>*NOTE− N response attribute.* | Y | Indication of an emergency situation. |
| DM57 | (*remaining fuel*) OF FUEL REMAINING AND (*remaining souls*) SOULS ON BOARD<br>*NOTE− N response attribute.* | Y | Report indicating fuel remaining (time) and number of persons on board. |
| DM58 | CANCEL EMERGENCY<br>*NOTE− N response attribute.* | Y | Indication that the emergency situation is canceled. |

*TBL 14−2−16*

**Standard Response Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM0 | UNABLE | N | Indication that the message cannot be complied with. |
| UM1 | STANDBY | N | Indication that the message will be responded to shortly. |
| UM3 | ROGER | N | Indication that the message is received. |

*TBL 14−2−17*

**Standard Response Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM0 | WILCO | N | Indication that the instruction is understood and will be complied with. |
| DM1 | UNABLE | N | Indication that the instruction cannot be complied with. |
| DM2 | STANDBY | N | Indication that the message will be responded to shortly. |
| DM3 | ROGER<br>*NOTE− ROGER is the only correct response to an uplink free text message.* | N | Indication that the message is received. |

*TBL 14−2−18*

**Supplemental Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM166 | DUE TO TRAFFIC | N | Indication that the associated message is issued due to the specified reason. |
| UM167 | DUE TO AIRSPACE RESTRICTION | N | Indication that the associated message is issued due to the specified reason. |

*TBL 14−2−19*

**Supplemental Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM65 | DUE TO WEATHER | N | Indication that the associated message is issued due to specified reason. |
| DM66 | DUE TO AIRCRAFT PERFORMANCE | N | Indication that the associated message is issued due to specified reason. |

*TBL 14−2−20*

**Free Text Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM169 | (*free text*) | R | A message or part of a message that does not conform to any standard message element in the PANSATM (Doc 4444). |
| UM169 | (*free text*) CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION | R | See Note |
| UM169 | (*free text*) "[facility designation]" LOCAL ALTIMETER (for Altimeter reporting Station) | R | See Note |
| UM169 | (*free text*) "[facility designation] LOCAL ALTIMETER MORE THAN ONE HOUR" OLD | R | See Note |
| UM169 | (*free text*) DUE TO WEATHER | R | See Note |
| UM169 | (*free text*) REST OF ROUTE UNCHANGED | R | See Note |
| UM169 | (*free text*) TRAFFIC FLOW MANAGEMENT REROUTE | R | See Note |
| UM169 | (*free text*) DUE TO SPACING | R | See Note |
| UM169 | (*free text*) ATC HAS YOUR REQUEST | R | See Note |
| UM169 | (*free text*) ATC ADVISORY | R | See Note |

***NOTE−***
***These are FAA scripted free text messages with no GOLD equivalent.***

*TBL 14−2−21*

**Free Text Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM68 | (*free text*)<br>*NOTE 1. – Urgency or Distress (M alert attribute)*<br>*NOTE 2. – Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.* | Y | N/A |

*TBL 14–2–22*

**System Management Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| UM159 | ERROR (*error information*) | N | System-generated notification of an error. |
| UM160 | NEXT DATA AUTHORITY (*ICAO facility designation*)<br>*NOTE– The facility designation is required.* | N | System-generated notification of the next data authority or the cancellation thereof. |

*TBL 14–2–23*

**System Management Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response Attribute | Message element intended use |
|---|---|---|---|
| DM62 | ERROR (*error information*) | N | System-generated notification of an error. |
| DM63 | NOT CURRENT DATA AUTHORITY | N | System-generated rejection of any CPDLC message sent from a ground facility that is not the current data authority. |
| DM64 | (*ICAO facility designation*)<br>*NOTE– Use by FANS 1/A aircraft in B1 environments.* | N | System-generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported. |

| OLD | NEW |
|---|---|
| Add | **Section 3. Advanced Technologies and Oceanic Procedures (ATOP) – Oceanic Controller Pilot Data Link Communications (CPDLC)** |
| Add | *NOTE–*<br>*Controller Pilot Data Link Communications (CPDLC) messages in use in Oceanic operations are contained in TBL 14–3–1 through TBL 14–3–26.* |

| OLD | NEW |
|---|---|
| Add | **14–3–1. MEANS OF COMMUNICATION** |
| Add | **a. When CPDLC is available and CPDLC connected aircraft are operating outside of VHF coverage, CPDLC must be used as the primary means of communication.** |
| Add | **b. Voice communications may be utilized for CPDLC aircraft when it will provide an operational advantage and/or when workload or equipment capabilities demand.** |
| Add | **c. When CPDLC is being utilized, a voice backup must exist (e.g., HF, SATCOM, Third Party).** |
| Add | **d. When a pilot communicates via CPDLC, the response should be via CPDLC.** |

| | |
|---|---|
| Add | **e. To the extent possible, the CPDLC message set should be used in lieu of free text messages.** |
| Add | ***NOTE–***<br>**1. *The CPDLC message sets are contained in TBL 14–3–1 through TBL 14–3–26.*** |
| Add | **2. *The use of the CPDLC message set ensures the proper "closure" of CPDLC exchanges.*** |

| OLD | NEW |
|---|---|
| Add | **14–3–2. TRANSFER OF COMMUNICATIONS TO THE NEXT FACILITY** |
| Add | **a. When the receiving facility is capable of CPDLC communications, the data link transfer is automatic and is accomplished within facility adapted parameters.** |
| Add | **b. When a receiving facility is not CPDLC capable, the transfer of communications must be made in accordance with local directives and Letters of Agreement (LOAs).** |

| OLD | NEW |
|---|---|
| Add | **14–3–3. ABNORMAL CONDITIONS** |
| Add | **a. If any portion of the automated transfer fails, the controller should attempt to initiate the transfer manually. If unable to complete the data link transfer, the controller should advise the pilot to log on to the next facility and send an End Service (EOS) message.** |
| Add | **b. If CPDLC fails, voice communications must be utilized until CPDLC connections can be reestablished.** |
| Add | **c. If the CPDLC connection is lost on a specific aircraft, the controller should send a connection request message (CR1) or advise the pilot via backup communications to log on again.** |
| Add | **d. If CPDLC service is to be canceled, the controller must advise the pilot as early as possible to facilitate a smooth transition to voice communications. Workload permitting, the controller should also advise the pilot of the reason for the termination of data link.** |

Add **e. When there is uncertainty that a clearance was delivered to an aircraft via CPDLC, the controller must continue to protect the airspace associated with the clearance until an appropriate operational response is received from the flight crew. If an expected operational response to a clearance is not received, the controller will initiate appropriate action to ensure that the clearance was received by the flight crew. On initial voice contact with aircraft preface the message with the following:**

Add ***PHRASEOLOGY–***
***(Call Sign) CPDLC Failure, (message).***

**OLD**

Add

**NEW**

***TBL 14–3–1***
**Response Attribute of CPDLC Message Element**

| Response Attribute | Description |
|---|---|
| | **For Uplink Message** |
| **W/U** | **Response required.**<br>**Valid responses. WILCO, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR.**<br>***NOTE– WILCO, UNABLE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.***<br>***FANS 1/A.— WILCO, UNABLE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.*** |
| **A/N** | **Response required.**<br>**Valid responses. AFFIRM, NEGATIVE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR**<br>***NOTE– AFFIRM, NEGATIVE, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message. FANS 1/A.— AFFIRM, NEGATIVE, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY.*** |
| **R** | **Response required.**<br>**Valid responses. ROGER, UNABLE, STANDBY, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, LOGICAL ACKNOWLEDGEMENT (only if required), ERROR.**<br>***NOTE– ROGER, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY and ERROR will close the uplink message.***<br>***FANS 1/A.— ROGER, STANDBY, ERROR, NOT CURRENT DATA AUTHORITY. FANS 1/A aircraft do not have the capability to send UNABLE in response to an uplink message containing message elements with an "R" response attribute. For these aircraft, the flight crew may use alternative means to UNABLE the message. These alternative means will need to be taken into consideration to ensure proper technical and operational closure of the communication transaction.*** |

| | |
|---|---|
| **Y** | **Response required.**<br>**Valid responses: Any CPDLC downlink message, LOGICAL ACKNOWLEDGEMENT (only if required).** |
| **N** | **No response required unless logical acknowledgement is required.**<br>**Valid Responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, NOT CURRENT DATA AUTHORITY, NOT AUTHORIZED NEXT DATA AUTHORITY, ERROR.**<br>***FANS 1/A.— "N" is defined as "no response is required," but not used. Under some circumstances, an ERROR message will also close an uplink message.*** |
| **NE** | **[Not defined in Doc 4444]**<br>***FANS 1/A.— The WILCO, UNABLE, AFFIRM, NEGATIVE, ROGER, and STANDBY responses are not enabled (NE) for flight crew selection. An uplink message with a response attribute NE is considered to be closed even though a response may be required operationally. Under some circumstances, a downlink error message may be linked to an uplink message with a NE attribute.*** |
| **For Downlink Message** | |
| **Y** | **Response required. Yes**<br>**Valid responses. Any CPDLC uplink message, LOGICAL ACKNOWLEDGEMENT (only if required).** |
| **N** | **Response required. No, unless logical acknowledgement required.**<br>**Valid responses (only if LOGICAL ACKNOWLEDGEMENT is required). LOGICAL ACKNOWLEDGEMENT, SERVICE UNAVAILABLE, FLIGHT PLAN NOT HELD, ERROR**<br>***FANS 1/A.— Aircraft do not have the capability to receive technical responses to downlink message elements with an "N" response attribute (other than LACK or ERROR for ATN B1 aircraft). In some cases, the response attribute is different between FANS 1/A aircraft and Doc 4444. As an example, most emergency messages have an "N" response attribute for FANS 1/A whereas Doc 4444 defines a "Y" response attribute for them. As a consequence, for FANS 1/A aircraft, ATC will need to use alternative means to acknowledge to the flight crew that an emergency message has been received.*** |

***TBL–14–3–2***

**Route Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM74** | **PROCEED DIRECT TO *(position)*** | **W/U** | **Instruction to proceed directly to the specified position.** |
| **UM75** | **WHEN ABLE PROCEED DIRECT TO (*position*)**<br>***NOTE– This message element is equivalent to SUPU–5 plus RTEU–2 in Doc 4444.*** | **W/U** | **Instruction to proceed directly to the specified position.** |
| **UM76** | **AT (*time*) PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed, at the specified time, directly to the specified position.** |
| **UM77** | **AT (*position*) PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed, at the specified position, directly to the next specified position.** |
| **UM78** | **AT (*altitude*) PROCEED DIRECT TO (*position*)** | **W/U** | **Instruction to proceed upon reaching the specified altitude, directly to the specified position.** |

| | | | |
|---|---|---|---|
| **UM79** | **CLEARED TO *(position)* VIA *(route clearance)*** | **W/U** | **Instruction to proceed to the specified position via the specified route.** |
| **UM80** | **CLEARED *(route clearance)*** | **W/U** | **Instruction to proceed via the specified route.** |
| **UM83** | **AT *(position)* CLEARED *(route clearance)*** | **W/U** | **Instruction to proceed from the specified position via the specified route.** |
| **UM85** | **EXPECT (*route clearance*)** | **R** | **Notification that a clearance to fly on the specified route may be issued.** |
| **UM86** | **AT (*position*) EXPECT (*route clearance*)** | **R** | **Notification that a clearance to fly on the specified route from the specified position may be issued.** |
| **UM87** | **EXPECT DIRECT TO (*position*)** | **R** | **Notification that a clearance to fly directly to the specified position may be issued.** |
| **UM88** | **AT (*position*) EXPECT DIRECT TO (*position*)** | **R** | **Notification that a clearance to fly directly from the first specified position to the next specified position may be issued.** |
| **UM89** | **AT (*time*) EXPECT DIRECT TO (*position*)** | **R** | **Notification that a clearance to fly directly to the specified position commencing at the specified time may be issued.** |
| **UM90** | **AT (*altitude*) EXPECT DIRECT TO (*position*)** | **R** | **Notification that a clearance to fly directly to the specified position commencing when the specified altitude is reached may be issued.** |
| **UM93** | **EXPECT FURTHER CLEARANCE AT (*time*)** | **R** | **Notification that an onwards clearance may be issued at the specified time.** |
| **UM99** | **EXPECT (*procedure name*)**<br>***NOTE– Used when a published procedure is designated.*** | **R** | **Notification that a clearance may be issued for the aircraft to fly the specified procedure or clearance name.** |
| **UM137** | **CONFIRM ASSIGNED ROUTE**<br>***NOTE– NE response attribute.*** | **NE** | **Request to confirm the assigned route.** |
| **UM147** | **REQUEST POSITION REPORT** | **NE** | **Request to make a position report.** |

*TBL 14–3–3*

**Route Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM22 | REQUEST DIRECT TO *(position)* | Y | Request for a direct clearance to the specified position. |
| DM23 | REQUEST (*procedure name*) | Y | Request for the specified procedure or clearance name. |
| DM24 | REQUEST (*route clearance*) | Y | Request for the specified route. |
| DM25 | REQUEST CLEARANCE | Y | Request for the specified clearance. |
| DM26 | REQUEST WEATHER DEVIATION TO (*position*) VIA (*route clearance*) | Y | Request for a weather deviation to the specified position via the specified route. |
| DM40 | ASSIGNED ROUTE (*route clearance*) | N | Confirmation that the assigned route is the specified route. |
| DM48 | POSITION REPORT (*position report*) | N | Position report. |
| DM51 | WHEN CAN WE EXPECT BACK ON ROUTE | Y | Request for the time or position that can be expected to rejoin the cleared route. |
| DM70 | REQUEST HEADING (*degrees*) | Y | Request for the specified heading. |
| DM71 | REQUEST GROUND TRACK (*degrees*) | Y | Request for the specified ground track. |

*TBL 14–3–4*

**Lateral Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM64 | OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction. |
| UM65 | AT (*position*) OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified position. |
| UM66 | AT (*time*) OFFSET (*distance offset*) (*direction*) OF ROUTE | W/U | Instruction to fly a parallel track to the cleared route at a displacement of the specified distance in the specified direction and commencing at the specified time. |
| UM67 | PROCEED BACK ON ROUTE | W/U | Instruction to rejoin the cleared route. |
| UM68 | REJOIN ROUTE BY (*position*) | W/U | Instruction to rejoin the cleared route before passing the specified position. |
| UM69 | REJOIN ROUTE BY (*time*) | W/U | Instruction to rejoin the cleared route before the specified time. |

| | | | |
|---|---|---|---|
| **UM70** | **EXPECT BACK ON ROUTE BY (*position*)** | **W/U** | **Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before passing the specified position.** |
| **UM71** | **EXPECT BACK ON ROUTE BY (*time*)** | **W/U** | **Notification that a clearance may be issued to enable the aircraft to rejoin the cleared route before the specified time.** |
| **UM72** | **RESUME OWN NAVIGATION** | **W/U** | **Instruction to resume own navigation following a period of tracking or heading clearances. May be used in conjunction with an instruction on how or where to rejoin the cleared route.** |
| **UM82** | **CLEARED TO DEVIATE UP TO (*distance offset*) (*direction*) OF ROUTE** | **W/U** | **Instruction allowing deviation up to the specified distance(s) from the cleared route in the specified direction(s).** |
| **UM98** | **IMMEDIATELY TURN (*direction*) HEADING (*degrees*)**<br>***NOTE– This message element is equivalent to EMGU–2 plus LATU–11 in Doc 4444.*** | **W/U** | **Instruction to turn left or right as specified on to the specified heading.** |
| **UM127** | **REPORT BACK ON ROUTE**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report when the aircraft is back on the cleared route.** |
| **UM130** | **REPORT PASSING (*position*)**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report upon passing the specified position.** |
| **UM132** | **CONFIRM POSITION** | **NE** | **Instruction to report the present position.** |
| **UM138** | **CONFIRM TIME OVER REPORTED WAYPOINT** | **NE** | **Instruction to confirm the previously reported time over the last reported waypoint.** |
| **UM139** | **CONFIRM REPORTED WAYPOINT** | **NE** | **Instruction to confirm the identity of the previously reported waypoint.** |
| **UM140** | **CONFIRM NEXT WAYPOINT** | **NE** | **Instruction to confirm the identity of the next waypoint.** |
| **UM141** | **CONFIRM NEXT WAYPOINT ETA** | **NE** | **Instruction to confirm the previously reported estimated time at the next waypoint.** |
| **UM142** | **CONFIRM ENSUING WAYPOINT** | **NE** | **Instruction to confirm the identity of the next plus one waypoint.** |
| **UM145** | **CONFIRM HEADING** | **NE** | **Instruction to report the present heading.** |
| **UM146** | **REPORT GROUND TRACK** | **NE** | **Instruction to report the present ground track.** |
| **UM152** | **WHEN CAN YOU ACCEPT (*specified distance*) (*direction*) OFFSET** | **NE** | **Instruction to report the earliest time when the specified offset track can be accepted.** |

***TBL 14–3–5***

**Lateral Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM15 | REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request for a parallel track from the cleared route at a displacement of the specified distance in the specified direction. |
| DM16 | AT (*position*) REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified position. |
| DM17 | AT (*time*) REQUEST OFFSET (*specified distance*) (*direction*) OF ROUTE | Y | Request that a parallel track, offset from the cleared track by the specified distance in the specified direction, be approved from the specified time. |
| DM27 | REQUEST WEATHER DEVIATION UP TO (*specified distance*) (*direction*) OF ROUTE | Y | Request for a weather deviation up to the specified distance(s) off track in the specified direction(s). |
| DM31 | PASSING (*position*) | N | Report indicating passing the specified position. |
| DM33 | PRESENT POSITION (*position*) | N | Notification of the present position. |
| DM35 | PRESENT HEADING (*degrees*) | N | Notification of the present heading in degrees. |
| DM36 | PRESENT GROUND TRACK (*degrees*) | N | Notification of the present ground track in degrees. |
| DM41 | BACK ON ROUTE | N | Report indicating that the cleared route has been rejoined. |
| DM42 | NEXT WAYPOINT (*position*) | N | The next waypoint is the specified position. |
| DM43 | NEXT WAYPOINT ETA (*time*) | N | The ETA at the next waypoint is as specified. |
| DM44 | ENSUING WAYPOINT (*position*) | N | The next plus one waypoint is the specified position. |
| DM45 | REPORTED WAYPOINT (*position*) | N | Clarification of previously reported waypoint passage. |
| DM46 | REPORTED WAYPOINT (*time*) | N | Clarification of time over previously reported waypoint. |
| DM59 | DIVERTING TO *(position)* VIA *(route clearance)*<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N | Report indicating diverting to the specified position via the specified route, which may be sent without any previous coordination done with ATC. |
| DM60 | OFFSETTING *(distance offset) (direction)* OF ROUTE<br>*NOTE 1. – H alert attribute.*<br>*NOTE 2. – N response attribute.* | N | Report indicating that the aircraft is offsetting to a parallel track at the specified distance in the specified direction off from the cleared route. |

| | | | |
|---|---|---|---|
| **DM80** | **DEVIATING *(deviation offset)* *(direction)* OF ROUTE**<br>***NOTE 1. – H alert attribute.***<br>***NOTE 2. – N response attribute.*** | **N** | **Report indicating deviating specified distance or degrees in the specified direction from the cleared route.** |
| **DM67** | **WE CAN ACCEPT (*direction*) (*distance offset*) AT (*time*)** | **N** | **We can accept a parallel track offset the specified distance in the specified direction at the specified time.** |
| **DM67** | **WE CANNOT ACCEPT (*direction*) (*distance offset*)** | **N** | **We cannot accept a parallel track offset the specified distance in the specified direction.** |
| **DM67** | **WE CANNOT ACCEPT (*altitude*)** | **N** | **We cannot accept the specified altitude.** |

***TBL 14–3–6***

**Altitude Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM6** | **EXPECT *(altitude)*** | **R** | **Notification that an altitude change instruction should be expected.** |
| **UM7** | **EXPECT CLIMB AT *(time)*** | **R** | **Notification that an instruction may be expected for the aircraft to commence climb at the specified time.** |
| **UM8** | **EXPECT CLIMB AT (*position*)** | **R** | **Notification that an instruction may be expected for the aircraft to commence climb at the specified position.** |
| **UM9** | **EXPECT DESCENT AT (*time*)** | **R** | **Notification that an instruction may be expected for the aircraft to commence descent at the specified time.** |
| **UM10** | **EXPECT DESCENT AT (*position*)** | **R** | **Notification that an instruction may be expected for the aircraft to commence descent at the specified position.** |
| **UM11** | **EXPECT CRUISE CLIMB AT *(time)*** | **R** | **Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time.** |
| **UM12** | **EXPECT CRUISE CLIMB AT (*position*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position.** |
| **UM13** | **AT (*time*) EXPECT CLIMB TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence climb at the specified time to the specified altitude.** |
| **UM14** | **AT (*position*) EXPECT CLIMB TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence climb at the specified position to the specified altitude.** |
| **UM15** | **AT (*time*) EXPECT DESCENT TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence descent at the specified time to the specified altitude.** |

| | | | |
|---|---|---|---|
| **UM16** | **AT (*position*) EXPECT DESCENT TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence descent at the specified position to the specified altitude.** |
| **UM17** | **AT (*time*) EXPECT CRUISE CLIMB TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified time to the specified altitude.** |
| **UM18** | **AT (*position*) EXPECT CRUISE CLIMB TO (*altitude*)** | **R** | **Notification that an instruction should be expected for the aircraft to commence cruise climb at the specified position to the specified altitude.** |
| **UM19** | **MAINTAIN *(altitude)*** | **W/U** | **Instruction to maintain the specified altitude.** |
| **UM20** | **CLIMB TO AND MAINTAIN *(altitude)*** | **W/U** | **Instruction that a climb to the specified altitude is to commence and once reached is to be maintained.** |
| **UM21** | **AT (*time*) CLIMB TO AND MAINTAIN (*altitude*)** | **W/U** | **Instruction that at the specified time a climb to the specified altitude is to commence and once reached is to be maintained.**<br>***NOTE– This message element would be preceded with uM19 MAINTAIN (altitude) to prevent the premature execution of the instruction.*** |
| **UM22** | **AT (*position*) CLIMB TO AND MAINTAIN (*altitude*)** | **W/U** | **Instruction that at the specified position a climb to the specified altitude is to commence and once reached is to be maintained.**<br>***NOTE– This message element would be preceded with uM19 MAINTAIN (altitude) to prevent the premature execution of the instruction.*** |
| **UM23** | **DESCEND TO AND MAINTAIN *(altitude)*** | **W/U** | **Instruction that a descent to the specified altitude is to commence and once reached is to be maintained.** |
| **UM24** | **AT (*time*) DESCEND TO AND MAINTAIN (*altitude*)** | **W/U** | **Instruction that at the specified time a descent to the specified altitude is to commence and once reached is to be maintained.** |
| **UM25** | **AT (*position*) DESCEND TO AND MAINTAIN (*altitude*)** | **W/U** | **Instruction that at the specified position a descent to the specified altitude is to commence and once reached is to be maintained.** |
| **UM26** | **CLIMB TO REACH (*altitude*) BY (*time*)** | **W/U** | **Instruction that a climb is to be completed such that the specified altitude is reached before the specified time.** |
| **UM27** | **CLIMB TO REACH (*altitude*) BY (*position*)** | **W/U** | **Instruction that a climb is to be completed such that the specified altitude is reached before passing the specified position.** |

| | | | |
|---|---|---|---|
| **UM28** | **DESCEND TO REACH (*altitude*) BY (*time*)** | **W/U** | **Instruction that a descent is to be completed such that the specified altitude is reached before the specified time.** |
| **UM29** | **DESCEND TO REACH (*altitude*) BY (*position*)** | **W/U** | **Instruction that a descent is to be completed such that the specified altitude is reached before passing the specified position.** |
| **UM30** | **MAINTAIN BLOCK (*altitude*) TO (*altitude*)** | **W/U** | **Instruction to maintain the specified vertical range.** |
| **UM31** | **CLIMB TO AND MAINTAIN BLOCK** | **W/U** | **Instruction that a climb to the specified vertical range is to commence and once reached is to be maintained.** |
| **UM32** | **DESCEND TO AND MAINTAIN BLOCK (*altitude*) TO (*altitude*)** | **W/U** | **Instruction that a descent to the specified vertical range is to commence and once reached is to be maintained.** |
| **UM33** | **CRUISE (*altitude*)** | | **Instruction that authorizes a pilot to conduct flight at any altitude from the minimum altitude up to and including the altitude specified in the clearance. Further, it is approval for the pilot to proceed to and make an approach at the destination airport.** |
| **UM34** | **CRUISE CLIMB TO (*altitude*)** | **W/U** | **A cruise climb is to commence and continue until the specified altitude is reached.** |
| **UM35** | **CRUISE CLIMB ABOVE (*altitude*)** | **W/U** | **A cruise climb can commence once above the specified altitude.** |
| **UM36** | **EXPEDITE CLIMB TO (*altitude*)** | **W/U** | **Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM37** | **EXPEDITE DESCENT TO *(altitude)*** | **W/U** | **Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM38** | **IMMEDIATELY CLIMB TO (*altitude*)** | **W/U** | **Instruction that a climb to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM39** | **IMMEDIATELY DESCEND TO (*altitude*)** | **W/U** | **Instruction that a descent to the specified altitude or vertical range is to commence and once reached is to be maintained.** |
| **UM40** | **IMMEDIATELY STOP CLIMB AT (*altitude*)** | **W/U** | **Urgent instruction to immediately stop a climb once the specified altitude is reached.** |
| **UM41** | **IMMEDIATELY STOP DESCENT AT (*altitude*)** | **W/U** | **Urgent instruction to immediately stop a descent once the specified altitude is reached.** |
| **UM128** | **REPORT LEAVING (*altitude*)**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report upon leaving the specified altitude.** |
| **UM129** | **REPORT LEVEL (*altitude*)**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report upon maintaining the specified altitude.** |
| **UM133** | **CONFIRM ALTITUDE** | **NE** | **Instruction to report the present altitude.** |
| **UM135** | **CONFIRM ASSIGNED ALTITUDE**<br>***NOTE– NE response attribute.*** | **NE** | **Request to confirm the assigned altitude.** |

| | | | |
|---|---|---|---|
| **UM148** | **WHEN CAN YOU ACCEPT (*altitude*)**<br>***NOTE– NE response attribute.*** | **NE** | **Request for the earliest time or position when the specified altitude can be accepted.** |
| **UM149** | **CAN YOU ACCEPT (*altitude*) AT (*position*)** | **A/N** | **Request to indicate whether or not the specified altitude can be accepted at the specified position.** |
| **UM150** | **CAN YOU ACCEPT (*altitude*) AT (*time*)** | **A/N** | **Request to indicate whether or not the specified altitude can be accepted at the specified time.** |
| **UM171** | **CLIMB AT (*vertical rate*) MINIMUM** | **W/U** | **Instruction to climb at the specified rate or greater.** |
| **UM172** | **CLIMB AT (*vertical rate*) MAXIMUM** | **W/U** | **Instruction to climb at the specified rate or less.** |
| **UM173** | **DESCEND AT (*vertical rate*) MINIMUM** | **W/U** | **Instruction to descend at the specified rate or greater.** |
| **UM174** | **DESCEND AT (*vertical rate*) MAXIMUM** | **W/U** | **Instruction to descend at the specified rate or less.** |
| **UM175** | **REPORT REACHING (*altitude*)** | **R** | **Instruction to report when the aircraft has reached the specified altitude.**<br>***NOTE– To be interpreted as "Report reaching an assigned altitude."*** |
| **UM177** | **AT PILOTS DISCRETION** | **N** | **Used in conjunction with a clearance or instruction to indicate that the pilot may execute when prepared to do so.** |
| **UM180** | **REACHING BLOCK (*altitude*) TO (*altitude*)**<br>***NOTE– R response attribute.*** | **W/U** | **Instruction to report upon reaching the specified vertical range.** |

***TBL 14–3–7***

**Altitude Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **DM6** | **REQUEST *(altitude)*** | **Y** | **Request to fly at the specified altitude.** |
| **DM7** | **REQUEST BLOCK (*altitude*) TO (*altitude*)** | **Y** | **Request to fly at the specified vertical range.** |
| **DM8** | **REQUEST CRUISE CLIMB TO (*altitude*)** | **Y** | **Request to cruise climb to the specified altitude.**<br>***NOTE– Due to different interpretations between the various ATS units, this element should be avoided.*** |
| **DM9** | **REQUEST CLIMB TO *(altitude)*** | **Y** | **Request for a climb to the specified altitude or vertical range.** |
| **DM10** | **REQUEST DESCENT TO *(altitude)*** | **Y** | **Request for a descent to the specified altitude or vertical range.** |

| | | | |
|---|---|---|---|
| **DM11** | **AT (*position*) REQUEST CLIMB TO (*altitude*)** | **Y** | **Request for a climb/descent to the specified altitude to commence at the specified position.** |
| **DM12** | **AT (*position*) REQUEST DESCENT TO (*altitude*)** | **Y** | **Request for a climb/descent to the specified altitude to commence at the specified position.** |
| **DM13** | **AT TIME (*time*) REQUEST CLIMB TO (*altitude*)** | **Y** | **Request for a climb/descent to the specified altitude to commence at the specified time.** |
| **DM14** | **AT TIME (*time*) REQUEST DESCENT TO (*altitude*)** | **Y** | **Request for a climb/descent to the specified altitude to commence at the specified time.** |
| **DM28** | **LEAVING (*altitude*)** | **N** | **Notification of leaving the specified altitude.** |
| **DM29** | **CLIMBING TO (*altitude*)** | **N** | **Report indicating climbing to the specified altitude.** |
| **DM30** | **DESCENDING TO (*altitude*)**<br>***NOTE– N alert attribute.*** | **N** | **Notification of descending to the specified altitude.** |
| **DM32** | **PRESENT ALTITUDE (*altitude*)** | **N** | **Notification of the present altitude.** |
| **DM37** | **LEVEL (*altitude*)** | **N** | **Report indicating that the specified altitude is being maintained.** |
| **DM38** | **ASSIGNED ALTITUDE *(altitude)*** | **N** | **Confirmation that the assigned altitude is the specified altitude or vertical range.** |
| **DM52** | **WHEN CAN WE EXPECT LOWER ALTITUDE** | **Y** | **Request for the earliest time or position that a descent can be expected.** |
| **DM53** | **WHEN CAN WE EXPECT HIGHER ALTITUDE** | **Y** | **Request for the earliest time or position that a climb can be expected.** |
| **DM54** | **WHEN CAN WE EXPECT CRUISE CLIMB TO (*altitude*)** | **Y** | **Request for the earliest time at which a clearance to cruise climb to the specified altitude can be expected.** |
| **DM61** | **DESCENDING TO *(altitude)***<br>***NOTE– Urgent alert attribute.*** | **N** | **Report indicating descending to the specified altitude.** |
| **DM67** | **‘WE CAN ACCEPT (*altitude*) AT TIME (*time*)’** | **N** | **We can accept the specified altitude at the specified time.** |
| **DM67** | **‘WE CANNOT ACCEPT (*altitude*)’** | **N** | **Indication that the specified altitude cannot be accepted.** |
| **DM67** | **‘WHEN CAN WE EXPECT CLIMB TO (*altitude*)’** | **N** | **Request for the earliest time at which a clearance to climb to the specified altitude can be expected.** |
| **DM67** | **‘WHEN CAN WE EXPECT DESCENT TO (*altitude*)’** | **N** | **Request for the earliest time at which a clearance to descend to the specified altitude can be expected.** |
| **DM72** | **REACHING (*altitude*)** | **N** | **Notification that the aircraft has reached the specified altitude.** |
| **DM75** | **AT PILOTS DISCRETION** | **N** | **Used in conjunction with another message to indicate that the pilot wishes to execute the request when the pilot is prepared to do so.** |

| | | | |
|---|---|---|---|
| DM76 | REACHING BLOCK (*altitude*) TO (*altitude*) | N | Report indicating reaching the specified vertical range. |
| DM77 | ASSIGNED BLOCK (*altitude*) TO (*altitude*)<br>*NOTE– Used for a vertical range.* | N | Confirmation that the assigned vertical range is the specified vertical range. |

*TBL ENR 14–3–8*

**Crossing Constraint Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM42 | EXPECT TO CROSS (*position*) AT (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at the specified altitude. |
| UM43 | EXPECT TO CROSS (*position*) AT OR ABOVE (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at or above the specified altitude. |
| UM44 | EXPECT TO CROSS (*position*) AT OR BELOW (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at or below the specified altitude. |
| UM45 | EXPECT TO CROSS (*position*) AT AND MAINTAIN (*altitude*) | R | Notification that a altitude change instruction should be expected which will require the specified position to be crossed at the specified altitude which is to be maintained subsequently. |
| UM46 | CROSS (*position*) AT (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM47 | CROSS (*position*) AT OR ABOVE (*altitude*) | W/U | Instruction that the specified position is to be crossed at or above the specified altitude. |
| UM48 | CROSS (*position*) AT OR BELOW (*altitude*) | W/U | Instruction that the specified position is to be crossed at or below the specified altitude. |
| UM49 | CROSS (*position*) AT AND MAINTAIN (*altitude*) | W/U | Instruction that the specified position is to be crossed at the specified altitude. |
| UM50 | CROSS (*position*) BETWEEN (*altitude*) AND (*altitude*) | W/U | Instruction that the specified position is to be crossed within the specified vertical range. |
| UM51 | CROSS (*position*) AT (*time*) | W/U | Instruction that the specified position is to be crossed at the specified time. |
| UM52 | CROSS (*position*) AT OR BEFORE (*time*) | W/U | Instruction that the specified position is to be crossed before the specified time. |
| UM53 | CROSS (*position*) AT OR AFTER (*time*) | W/U | Instruction that the specified position is to be crossed after the specified time. |
| UM54 | CROSS (*position*) BETWEEN (*time*) AND (*time*) | W/U | Instruction that the specified position is to be crossed between the specified times. |

| | | | |
|---|---|---|---|
| **UM55** | **CROSS (*position*) AT (*speed*)** | **W/U** | **Instruction that the specified position is to be crossed at the specified speed.** |
| **UM56** | **CROSS (*position*) AT OR LESS THAN (*speed*)** | **W/U** | **Instruction that the specified position is to be crossed at or less than the specified speed.** |
| **UM57** | **CROSS (*position*) AT OR GREATER THAN (*speed*)** | **W/U** | **Instruction that the specified position is to be crossed at or greater than the specified speed.** |
| **UM58** | **CROSS (*position*) AT (*time*) AT (*altitude*)** | **W/U** | **Instruction that the specified position is to be crossed at the specified time and at the specified altitude.** |
| **UM59** | **CROSS (*position*) AT OR BEFORE (*time*) AT (*altitude*)** | **W/U** | **Instruction that the specified position is to be crossed before the specified time and at the specified altitude.** |
| **UM60** | **CROSS (*position*) AT OR AFTER (*time*) AT (*altitude*)** | **W/U** | **Instruction that the specified position is to be crossed after the specified time and at the specified altitude.** |
| **UM61** | **CROSS *(position)* AT AND MAINTAIN *(altitude)* AT *(speed)***<br>***NOTE 1. – A vertical range cannot be provided.***<br>***NOTE 2. – This message element is equivalent to CSTU–14 plus LVLU–5 in Doc 4444.*** | **W/U** | **Instruction that the specified position is to be crossed at the altitude specified, and at the specified speed.** |
| **UM62** | **AT (*time*) CROSS (*position*) AT AND MAINTAIN (*altitude*)** | **W/U** | **Instruction that the specified position is to be crossed at the specified time and at the specified altitude.** |
| **UM63** | **AT (*time*) CROSS (*position*) AT AND MAINTAIN (*altitude*) AT (*speed*)** | **W/U** | **Instruction that the specified position is to be crossed at the specified time at the specified altitude, and at the specified speed.** |

***TBL 14–3–9***

**Speed Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM100** | **AT (*time*) EXPECT (*speed*)** | **R** | **Notification that a speed instruction may be issued to take effect at the specified time.** |
| **UM101** | **AT (*position*) EXPECT (*speed*)** | **R** | **Notification that a speed instruction may be issued to take effect at the specified position.** |
| **UM102** | **AT (*altitude*) EXPECT (*speed*)** | **R** | **Notification that a speed instruction may be issued to take effect at the specified altitude.** |
| **UM103** | **AT (*time*) EXPECT (*speed*) TO (*speed*)** | **R** | **Notification that a speed range instruction may be issued to be effective at the specified time.** |
| **UM104** | **AT (*position*) EXPECT (*speed*) TO (*speed*)** | **R** | **Notification that a speed range instruction may be issued to be effective at the specified position.** |

| | | | |
|---|---|---|---|
| **UM105** | **AT (*altitude*) EXPECT (*speed*) TO (*speed*)** | **R** | **Notification that a speed range instruction may be issued to be effective at the specified altitude.** |
| **UM106** | **MAINTAIN (*speed*)** | **W/U** | **Instruction to maintain the specified speed.** |
| **UM107** | **MAINTAIN PRESENT SPEED** | **W/U** | **Instruction to maintain the present speed.** |
| **UM108** | **MAINTAIN (*speed*) OR GREATER** | **W/U** | **Instruction to maintain the specified speed or greater.** |
| **UM109** | **MAINTAIN (*speed*) OR LESS** | **W/U** | **Instruction to maintain the specified speed or less.** |
| **UM110** | **MAINTAIN (*speed*) TO (*speed*)** | **W/U** | **Instruction to maintain the specified speed range.** |
| **UM111** | **INCREASE SPEED TO (*speed*)** | **W/U** | **Instruction that the present speed is to be increased to the specified speed and maintained until further advised.** |
| **UM112** | **INCREASE SPEED TO (*speed*) OR GREATER** | **W/U** | **Instruction that the present speed is to be increased to the specified speed or greater, and maintained at or above the specified speed until further advised.** |
| **UM113** | **REDUCE SPEED TO (*speed*)** | **W/U** | **Instruction that the present speed is to be reduced to the specified speed and maintained until further advised.** |
| **UM114** | **REDUCE SPEED TO (*speed*) OR LESS** | **W/U** | **Instruction that the present speed is to be reduced to the specified speed or less, and maintained at or below the specified speed until further advised.** |
| **UM115** | **DO NOT EXCEED (*speed*)** | **W/U** | **The specified speed is not to be exceeded.** |
| **UM116** | **RESUME NORMAL SPEED** | **W/U** | **Instruction to resume a normal speed. The aircraft no longer needs to comply with a previously issued speed restriction.** |
| **UM134** | **CONFIRM SPEED**<br>***NOTE– NE response attribute.*** | **NE** | **Request to report the speed defined by the speed type(s).** |
| **UM136** | **CONFIRM ASSIGNED SPEED**<br>***NOTE– NE response attribute.*** | **NE** | **Request to confirm the assigned speed.** |
| **UM151** | **WHEN CAN YOU ACCEPT (*speed*)**<br>***NOTE– NE response attribute.*** | **NE** | **Request for the earliest time or position when the specified speed can be accepted.** |

*TBL 14–3–10*

**Speed Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM18 | REQUEST (*speed*) | Y | Request for the specified speed. |
| DM19 | REQUEST (*speed*) TO (*speed*) | Y | Request to fly within the specified speed range. |
| DM34 | PRESENT SPEED (*speed*) | N | Report indicating the speed defined by the specified speed types is the specified speed. |
| DM39 | ASSIGNED SPEED (*speed*) | N | Confirmation that the assigned speed is the specified speed. |
| DM49 | WHEN CAN WE EXPECT (*speed*) | Y | Request for the earliest time or position that the specified speed can be expected. |
| DM50 | WHEN CAN WE EXPECT (*speed*) TO (*speed*) | Y | Request for the earliest time at which a clearance to a speed within the specified range can be expected. |
| DM67 | 'WE CAN ACCEPT (*speed*) AT TIME (*time*)' | N | Indication that the specified speed can be accepted at the specified time. |
| DM67 | 'WE CANNOT ACCEPT (*speed*)' | N | Indication that the specified speed cannot be accepted. |

*TBL 14–3–11*

**Air Traffic Advisory Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM123 | SQUAWK (*beacon code*) | W/U | Instruction to select the specified SSR code. |
| UM124 | STOP SQUAWK | W/U | Instruction to disable SSR transponder responses. |
| UM125 | SQUAWK ALTITUDE | W/U | Instruction to include altitude information in the SSR transponder responses. |
| UM126 | STOP ALTITUDE SQUAWK | W/U | Instruction to stop including altitude information in the SSR transponder responses. |
| UM144 | CONFIRM SQUAWK<br>*NOTE– NE response attribute.* | NE | Request to confirm the selected SSR code. |
| UM153 | ALTIMETER *(altimeter)*<br>*NOTE– The facility designation and the time of measurement cannot be provided.* | R | Advisory providing the specified altimeter setting for the specified facility. |
| UM154 | RADAR SERVICES TERMINATED | R | Advisory that the ATS surveillance service is terminated. |
| UM155 | RADAR CONTACT (*position*)<br>*NOTE– The provision of the position is required.* | R | Advisory that ATS surveillance service has been established. A position may be specified position. |

| | | | |
|---|---|---|---|
| **UM156** | **RADAR CONTACT LOST** | **R** | **Advisory that ATS surveillance contact has been lost.** |
| **UM158** | **ATIS (*ATIS code*)**<br>***NOTE– The airport is not provided.*** | **R** | **ATS advisory that the current ATIS *code* is as specified.** |
| **UM163** | **(*ICAO facility designation*) (tp4Table)** | **NE** | **Notification to the pilot of an ATSU identifier.** |
| **UM168** | **DISREGARD** | **N/E** | **The indicated communication should be ignored.**<br>**The previously sent uplink CPDLC message shall be ignored. DISREGARD should not refer to a clearance or instruction. If DISREGARD is used, another element shall be added to clarify which message is to be disregarded.** |
| **UM179** | **SQUAWK IDENT** | **W/U** | **Instruction that the 'ident' function on the SSR transponder is to be actuated.** |
| **UM182** | **CONFIRM ATIS CODE** | **NE** | **Instruction to report the identification code of the last ATIS received.** |

***TBL 14–3–12***

**Air Traffic Advisory Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **DM47** | **SQUAWKING (*code*)** | **N** | **Report indicating that the aircraft is squawking the specified SSR code.** |
| **DM79** | **ATIS (*ATIS code*)** | **N** | **The code of the latest ATIS received is as specified.** |

***TBL 14–3–13***

**Voice Communications Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM117** | **CONTACT *(ICAO unit name) (frequency)*** | **W/U** | **Instruction to establish voice contact with the specified ATS unit on the specified frequency.** |
| **UM118** | **AT (*position*) CONTACT (*ICAO unit name*) (*frequency*)** | **W/U** | **Instruction at the specified position to establish voice contact with the specified ATS unit on the specified frequency.** |
| **UM119** | **AT (*time*) CONTACT (*ICAO unit name*) (*frequency*)** | **W/U** | **Instruction at the specified time to establish voice contact with the specified ATS unit on the specified frequency.** |
| **UM120** | **MONITOR *(ICAO unit name) (frequency)*** | **W/U** | **Instruction to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.** |

| | | | |
|---|---|---|---|
| **UM121** | **AT (*position*) MONITOR (*ICAO unit name*) (*frequency*)** | **W/U** | **Instruction at the specified position to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.** |
| **UM122** | **AT (*time*) MONITOR (*ICAO unit name*) (*frequency*)** | **W/U** | **Instruction at the specified time to monitor the specified ATS unit on the specified frequency. The flight crew is not required to establish voice contact on the frequency.** |
| **UM157** | **CHECK STUCK MICROPHONE (*frequency*)**<br>***NOTE– R response attribute.*** | **R** | **Instruction to check the microphone due to detection of a continuous transmission on the specified frequency.** |

***TBL 14–3–14***

**Voice Communications Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **DM20** | **REQUEST VOICE CONTACT**<br>***NOTE– Used when a frequency is not required.*** | **Y** | **Request for voice contact on the specified frequency.** |
| **DM21** | **REQUEST VOICE CONTACT (*frequency*)**<br>***NOTE– Used when a frequency is required.*** | **Y** | **Request for voice contact on the specified frequency.** |

***TBL 14–3–15***

**Emergency/Urgency Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| **UM131** | **REPORT REMAINING FUEL AND SOULS ON BOARD**<br>***NOTE– NE response attribute.*** | **Y** | **Request to provide the fuel remaining (time) and the number of persons on board.** |
| | **Used in combination with LVLU–6 and LVLU–9, which is implemented in FANS 1/A as:** | **N** | **Instruction to immediately comply with the associated instruction to avoid imminent situation.** |
| **UM38** | **IMMEDIATELY CLIMB TO (*altitude*)** | | |
| **UM39** | **IMMEDIATELY DESCEND TO (*altitude*)** | | |

*TBL 14–3–16*

**Emergency/Urgency Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM55 | PAN PAN PAN<br>*NOTE– N response attribute.* | N | Indication of an urgent situation. |
| DM56 | MAYDAY MAYDAY MAYDAY<br>*NOTE– N response attribute.* | N | Indication of an emergency situation. |
| DM57 | *(remaining fuel)* OF FUEL REMAINING AND *(remaining souls)* SOULS ON BOARD<br>*NOTE– N response attribute.* | N | Report indicating fuel remaining (time) and number of persons on board. |
| DM58 | CANCEL EMERGENCY<br>*NOTE– N response attribute.* | N | Indication that the emergency situation is canceled. |

*TBL 14–3–17*

**Standard Response Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM0 | UNABLE | N | Indication that the message cannot be complied with. |
| UM1 | STANDBY | N | Indication that the message will be responded to shortly. |
| UM2 | REQUEST DEFERRED | NE | Indication that a long-term delay in response can be expected. |
| UM3 | ROGER | N | Indication that the message is received. |
| UM4 | AFFIRM | NE | Indication that ATC is responding positively to the message. |
| UM5 | NEGATIVE | NE | Indication that ATC is responding negatively to the message. |
| UM143 | CONFIRM REQUEST | N | Request to confirm the referenced request since the initial request was not understood. The request should be clarified and resubmitted. |

*TBL 14–3–18*

**Standard Response Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM0 | WILCO | N | Indication that the instruction is understood and will be complied with. |
| DM1 | UNABLE | N | Indication that the instruction cannot be complied with. |
| DM2 | STANDBY | N | Indication that the message will be responded to shortly. |
| DM3 | ROGER<br>*NOTE– ROGER is the only correct response to an uplink free text message.* | N | Indication that the message is received. |
| DM4 | AFFIRM | N | Indication of a positive response to a message. |
| DM5 | NEGATIVE | N | Indication of a negative response to a message. |

*TBL 14–3–19*

**Supplemental Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM164 | WHEN READY | NE | Indication that the associated instruction is to be executed when the flight crew is ready. |
| UM165 | THEN | NE | Used to link two messages, indicating the proper order of execution of clearances/ instructions. |
| UM166 | DUE TO TRAFFIC | N | Indication that the associated message is issued due to the specified reason. |
| UM167 | DUE TO AIRSPACE RESTRICTION | N | Indication that the associated message is issued due to the specified reason. |
| UM176 | MAINTAIN OWN SEPARATION AND VMC | W/U | Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions. |

***TBL 14–3–20***

**Supplemental Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM65 | DUE TO WEATHER | N | Indication that the associated message is issued due to specified reason. |
| DM66 | DUE TO AIRCRAFT PERFORMANCE | N | Indication that the associated message is issued due to specified reason. |

***TBL 14–3–21***

**Free Text Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM169 | *(free text)* | R | A message or part of a message that does not conform to any standard message element in the PANSATM (Doc 4444). |
| UM169 | *(free text)* CPDLC NOT IN USE UNTIL FURTHER NOTIFICATION | R | See Note |
| UM169 | *(free text)* "[facility designation]" (for Altimeter reporting Station) | R | See Note |
| UM169 | *(free text)* "[facility designation] ALTIMETER MORE THAN ONE HOUR" OLD | R | See Note |
| UM169 | *(free text)* DUE TO WEATHER | R | See Note |
| UM169 | *(free text)* REST OF ROUTE UNCHANGED | R | See Note |
| UM169 | *(free text)* TRAFFIC FLOW MANAGEMENT REROUTE | R | See Note |

***NOTE–***
***These are FAA scripted free text messages with no GOLD equivalent.***

*TBL 14–3–22*

**Free Text Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM67 | (*free text*)<br>*NOTE– Medium (M) alert attribute.* | N | |
| DM68 | *(free text)*<br>*NOTE 1. – Urgency or Medium (M) alert attribute.*<br>*NOTE 2. – Selecting any of the emergency message elements will result in this message element being enabled for the flight crew to include in the emergency message at their discretion.* | Y | |

*TBL 14–3–23*

**System Management Uplink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM159 | ERROR *(error information)* | N | System-generated notification of an error. |
| UM160 | NEXT DATA AUTHORITY *(ICAO facility designation)*<br>*NOTE– The facility designation is required.* | N | System-generated notification of the next data authority or the cancellation thereof. |
| UM161 | END SERVICE | NE | Notification to the avionics that the data link connection with the current data authority is being terminated. |
| UM162 | SERVICE UNAVAILABLE | NE | Notification that the ground system does not support this message. |

*TBL 14–3–24*

**System Management Downlink Message Elements**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM62 | ERROR *(error information)* | N | System-generated notification of an error. |
| DM63 | NOT CURRENT DATA AUTHORITY | N | System-generated rejection of any CPDLC message sent from a ground facility that is not the current data authority. |
| DM64 | (ICAO facility designation)<br>*NOTE– Use by FANS 1/A aircraft in B1 environments.* | N | System-generated notification that the ground system is not designated as the next data authority (NDA), indicating the identity of the current data authority (CDA). Identity of the NDA, if any, is also reported. |

*TBL 14–3–25*

**Additional Uplink Messages**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| UM176 | MAINTAIN OWN SEPARATION AND VMC | W/U | Notification that the pilot is responsible for maintaining separation from other traffic and is also responsible for maintaining Visual Meteorological Conditions. |

*TBL 14–3–26*

**Additional Downlink Messages**

| FANS 1/A Message Identifier | Message Content | Response | Message element intended use |
|---|---|---|---|
| DM74 | REQUEST TO MAINTAIN OWN SEPARATION AND VMC | N | States a desire by the pilot to provide his/her own separation and remain in VMC. |
| DM78 | AT (*time*) (*distance*) (*to*/*from*) (*position*) | N | At the specified time, the aircraft's position was as specified. |

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**1. PARAGRAPH NUMBER AND TITLE:**
1–2–6. ABBREVIATIONS
Chapter 9, Section 8. Unidentified Flying Object (UFO) Reports
9–8–1. GENERAL

**2. BACKGROUND:** On December 22, 2022, Title 50 United States Code (50 U.S.C.) section 3373, Establishment of All-Domain Anomaly Resolution Office, created and defined the term "unidentified anomalous phenomena (UAP)," which effectively replaced the term "unidentified flying object (UFO)" for governmental purposes. In addition, section 3373 identifies UAPs as a potential national security concern and establishes agency requirements for collecting reports of UAP incidents, including the FAA. As a result, the FAA will require air traffic control (ATC) to notify the National Tactical Security Operations (NTSO) Air Traffic

Security Coordinator (ATSC) team on the Domestic Events Network (DEN) of any pilot reports or air traffic personnel observations of UAP activity.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1–2–6. ABBREVIATIONS** | **1–2–6. ABBREVIATIONS** |
| As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1–2–1.) | No Change |
| ***TBL 1–2–1*** **FAA Order JO 7110.65 Abbreviations** | No Change |
| UFO . . . . . Unidentified flying object | **UAP . . . . . Unidentified anomalous phenomena** |

| OLD | NEW |
|---|---|
| **Section 8. Unidentified Flying Object (UFO) Reports** | **Section 8. Unidentified Anomalous Phenomena (UAP) Reports** |

| OLD | NEW |
|---|---|
| **9–8–1. GENERAL** | **9–8–1. GENERAL** |
| **a.** Persons wanting to report UFO/unexplained phenomena activity should contact a UFO/unexplained phenomena reporting data collection center, such as the National UFO Reporting Center, etc. | Delete |
| **b.** If concern is expressed that life or property might be endangered, report the activity to the local law enforcement department. | Delete |
| Add | **Inform the operations supervisor/CIC of any reported or observed unidentified anomalous phenomena (UAP)/unexplained phenomena activity.** |
| Add | ***REFERENCE–*** ***FAA Order JO 7210.3, Para 4–7–4, Unidentified Anomalous Phenomena (UAP) Reports.*** |

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**1. PARAGRAPH NUMBER AND TITLE:**
1–2–6. ABBREVIATIONS
10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)

**2. BACKGROUND:** The Corrective Action Request (CAR) 2021–005, National En Route Emergency Altitude Map (EAM), addresses recent emergency situations where aircraft in mountainous areas were unable to maintain minimum safe altitudes. The EAM is designed to provide advisory services to aircraft in distress by highlighting areas with lower terrain or obstacle clearance. It is not meant for assigning altitudes but for advising pilots. The EAM is similar to the Emergency Obstacle Video Maps (EOVM) and provides a single advisory-only safe emergency altitude, displayed in hundreds of feet, for each published minimum IFR altitude (MIA) area. This altitude is distinct from the displayed MIA. The EAM values are determined using FAA Order JO 7210.37, En Route Instrument Flight Rules (IFR) Minimum IFR Altitude (MIA) Sector Charts, considering Adverse Assumption Obstacles (AAOs) and vegetation heights, and are rounded up to the nearest 100-foot increment for Emergency Obstacle Clearance (EOC).

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **1–2–6. ABBREVIATIONS** | **1–2–6. ABBREVIATIONS** |
| As used in this order, the abbreviations listed below have the following meanings indicated. (See TBL 1–2–1.) | No Change |
| ***TBL 1–2–1*** **FAA Order JO 7110.65 Abbreviations** | No Change |
| Add | **AAO . . . . . Adverse Assumption Obstacle** |
| Add | **EAM . . . . . Emergency Altitude Map** |

| OLD | NEW |
|---|---|
| **10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)** | **10–2–17. EMERGENCY OBSTRUCTION VIDEO MAP (EOVM)/EMERGENCY ALTITUDE MAP (EAM)** |
| **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: | **a.** The **Terminal Area** EOVM **and En Route Air Traffic Control Services EAM are** 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: |
| **a1** through **a2** ***NOTE*** | No Change |
| **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. | No Change |
| ***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.* | No Change |
| ***REFERENCE–*** *FAA Order JO 7210.3, Para 3–8–4, Emergency Obstruction Video Map (EOVM).* | ***REFERENCE–*** *FAA Order JO 7210.3, Para 3–8–4, Emergency Obstruction Video Map (EOVM).* ***FAA Order JO 7210.3, Para 3–8–5, Emergency Altitude Map (EAM).*** |

**1. PARAGRAPH NUMBER AND TITLE:**
2–2–6. IFR FLIGHT PROGRESS DATA
2–3–4. TERMINAL DATA ENTRIES
3–9–6. SAME RUNWAY SEPARATION
3–9–7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES
3–9–8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS
3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS
3–10–3. SAME RUNWAY SEPARATION
3–10–4. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS
5–5–4. MINIMA
5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES
6–1–4. ADJACENT AIRPORT OPERATION
6–1–5. ARRIVAL MINIMA
6–7–5. INTERVAL MINIMA
7–4–3. CLEARANCE FOR VISUAL APPROACH
7–6–7. SEQUENCING

**2. BACKGROUND:** Air Traffic Services (AJT) has requested the contents of FAA Order JO 7110.126, Consolidated Wake Turbulence (CWT), be incorporated into FAA Order JO 7110.65, Air Traffic Control. In doing so, a single standard of wake turbulence separation will be used by all terminal air traffic facilities. En route facilities are exempt from the CWT standard and will remain with the legacy standards until ERAM and MEARTS systems are ready to migrate into the newer standard and automation is updated to accept the necessary changes to support CWT standards. CWT uses the most operationally advantageous radar separation standards from the four previous sets of standards while retaining the use of all time-based wake turbulence separation standards from FAA Order JO 7110.65. CWT is based on a nine-category system that further refines the grouping of aircraft, provides throughput gains at many of today's constrained airports, and is manageable for all airports throughout the NAS. When implemented, FAA Order JO 7110.126 and all paragraph 6 requirements published within the former order will be rendered obsolete and no longer applicable as the order will be canceled.

**3. CHANGE:**

**OLD**

**2–2–6. IFR FLIGHT PROGRESS DATA**

**Title** through **a1**

**2.** Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix.

**NEW**

**2–2–6. IFR FLIGHT PROGRESS DATA**

No Change

**2.** Number of aircraft if more than one, **wake category** indicator, type of aircraft, and aircraft equipment suffix.

**OLD**

**2–3–4. TERMINAL DATA ENTRIES**

**Title** through ***TBL 2–3–3*** **Block 2A**

**NEW**

**2–3–4. TERMINAL DATA ENTRIES**

No Change

**OLD**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix. |

**NEW**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, **wake category** indicator, type of aircraft, and aircraft equipment suffix. |

***TBL 2–3–3* Block 4** through ***TBL 2–3–4* Block 2A** — No Change

**OLD**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix. |

**NEW**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, **wake category** indicator, type of aircraft, and aircraft equipment suffix. |

***TBL 2–3–4* Block 4** through ***TBL 2–3–5* Block 2A** — No Change

**OLD**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, heavy aircraft indicator "H/" if appropriate, type of aircraft, and aircraft equipment suffix. |

**NEW**

| Block | Information Recorded |
|---|---|
| 3. | Number of aircraft if more than one, **wake category** indicator, type of aircraft, and aircraft equipment suffix. |

**OLD**

**3–9–6. SAME RUNWAY SEPARATION**

**Title** through **d** ***REFERENCE***

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

***REFERENCE–***
*FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.*
*FAA Order JO 7210.3, Para 10–5–3, Functional Use of Certified Tower radar Displays.*

**NEW**

**3–9–6. SAME RUNWAY SEPARATION**

No Change

**e.** The minima in paragraph 5–5–4, Minima, subparagraph **g and TBL 5–5–1**, may be applied in lieu of the time interval requirements in subparagraphs f, g, and h. When paragraph 5–5–4, **TBL 5–5–1**, is applied, ensure that the appropriate radar separation exists at or prior to the time an aircraft becomes airborne.

***REFERENCE–***
*FAA Order JO 7210.3, Para 2–1–16, Authorization for Separation Services by Towers.*
*FAA Order JO 7210.3, Para 10–5–3, Functional Use of Certified Tower **R**adar Displays.*

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

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

No Change

No Change

**f.** Separate aircraft taking off from the same runway or a parallel runway separated by less than 2,500 feet (see FIG 3−9−4):

No Change

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

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

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

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

Add

**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

***FIG 3−9−4***

No Change

**g.** Separate a small behind a B757 aircraft by *2 minutes* when departing:

**g.** Separate a **Category I aircraft** behind a **Category E** aircraft by *2 minutes* when departing:

**g1** through ***FIG 3−9−7***

No Change

**h.** Separate aircraft departing from a parallel runway separated by 2,500 feet or more if projected flight paths will cross (See FIG 3−9−8):

No Change

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

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

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

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

Add

**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

***FIG 3−9−8***

No Change

**i.** 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:

No Change

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

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

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

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

Add

**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

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

**4. Category I aircraft** behind **Category E aircraft** – *2 minutes*.

**j.** 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:

No Change

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

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

Add

**k.** Separate a small aircraft behind a B757 that has departed or made a low/missed approach by *3 minutes* when utilizing opposite direction takeoffs or landings from:

**k1** through **l** ***REFERENCE***

**m.** 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.*

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *4 minutes*.

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *3 minutes*.

**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *3 minutes.***

**k.** Separate a **Category I** aircraft behind a **Category E aircraft** that has departed or made a low/missed approach by *3 minutes* when utilizing opposite direction takeoffs or landings from:

No Change

**m.** Separate a **Category I** aircraft behind a **Category F or G aircraft** 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.

No Change

**OLD**

**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.

Add

Add

**NEW**

**3–9–7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES**

No Change

**1.** Separate a **Category I** aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing **Category F, G, or H** aircraft 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 **Category I** aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing **Category E aircraft** by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the **Category E** aircraft has taken off **from:**

**(a) The same runway or a parallel runway separated by less than 700 feet.**

**(b) Parallel runways separated by 700 feet or more, or parallel runways separated by 700 feet or more with the runway thresholds offset by 500 feet or more, if projected flight paths will cross.**

| | |
|---|---|
| **3.** Separate a small aircraft taking off from an intersection (same or opposite direction takeoff) behind a preceding departing B757 aircraft by ensuring that the small aircraft does not start takeoff roll until at least *3 minutes* after the B757 has taken off from: | Delete |
| **(a)** The same runway or a parallel runway separated by less than 700 feet. | Delete |
| **(b)** Parallel runways separated by 700 feet or more, or parallel runways separated by 700 feet or more with the runway thresholds offset by 500 feet or more, if projected flight paths will cross. | Delete |
| **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: | **3.** 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: |
| ***NOTE–***<br>*Apply paragraph 3–9–6, Same Runway Separation, subparagraph f to parallel runways separated by less than 2,500 feet with runway thresholds offset by less than 500 feet.* | Delete |
| **(a)** Heavy, large, or small behind super *–4 minutes*. | **(a) Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** *– 4 minutes*. |
| **(b)** Heavy, large, or small behind heavy *– 3 minutes*. | **(b) Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** *–3 minutes*. |
| Add | **(c) Category E, F, G, H, or I aircraft behind Category C aircraft – *3 minutes.*** |
| Add | ***NOTE–***<br>***Apply paragraph 3–9–6, Same Runway Separation, subparagraph f, to parallel runways separated by less than 2,500 feet with runway thresholds offset by less than 500 feet.*** |
| **5.** Inform aircraft when it is necessary to hold in order to provide the required time interval. | **4.** Inform aircraft when it is necessary to hold in order to provide the required time interval. |
| ***PHRASEOLOGY–***<br>*HOLD FOR WAKE TURBULENCE.* | No Change |
| ***NOTE–***<br>*Aircraft conducting touch-and-go and stop-and-go operations are considered to be departing from an intersection.* | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 3–8–2, Touch-and-Go or Stop-and-Go or Low Approach.* | No Change |
| **b.** The time interval is not required when: | No Change |

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

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

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

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

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

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

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

No Change

No Change

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

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

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

**OLD**

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

**Title** through ***FIG 3–9–11***

**WAKE TURBULENCE APPLICATION**

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

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

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

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

**NEW**

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

No Change

No Change

No Change

No Change

**(a) Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

**(b) Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

Add

**(c) Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

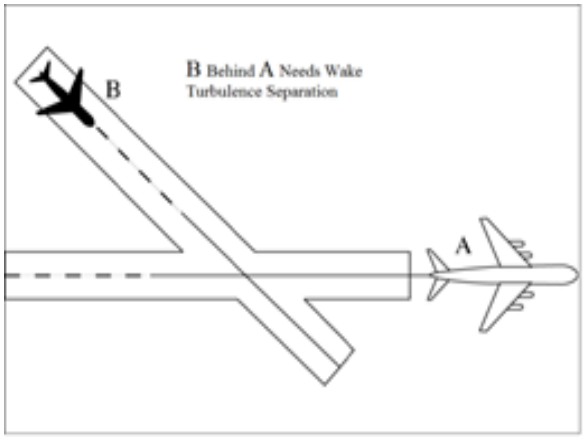
**(c)** Small behind B757 – *2 minutes*.

**(d) Category I aircraft** behind **Category E aircraft** – *2 minutes*.

**OLD**

***FIG 3–9–12***

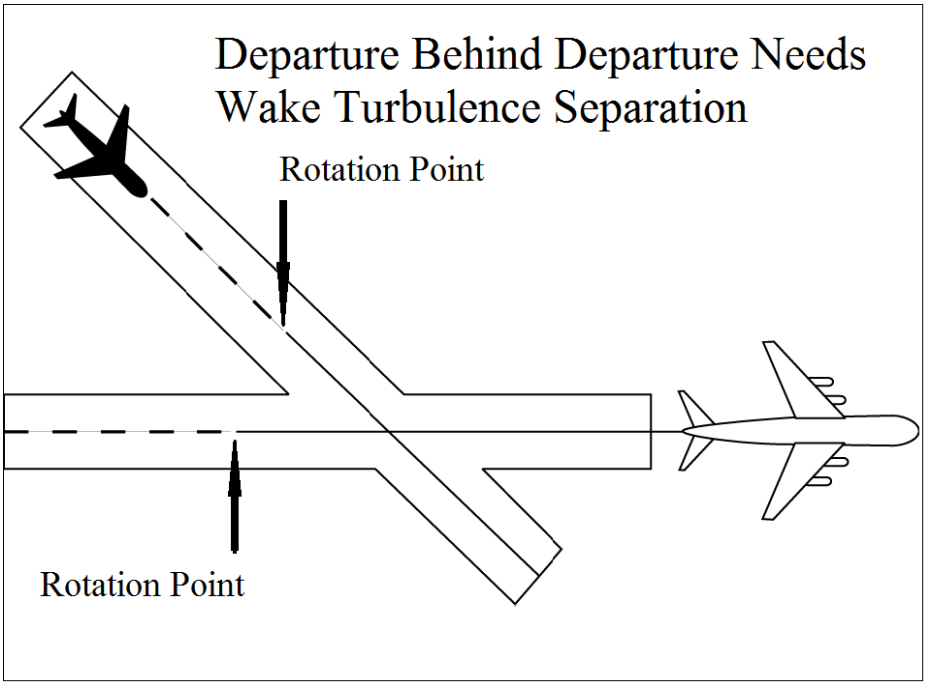
**Departure Behind Departure on Intersecting Runway**




**NEW**

***FIG 3–9–12***

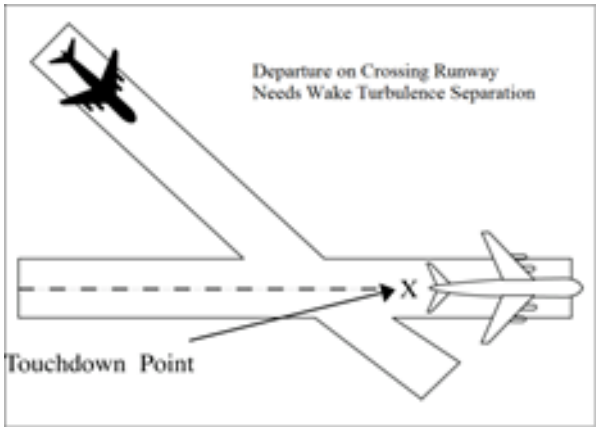
**Departure Behind Departure on Intersecting Runway**



**OLD**

*FIG 3–9–13*

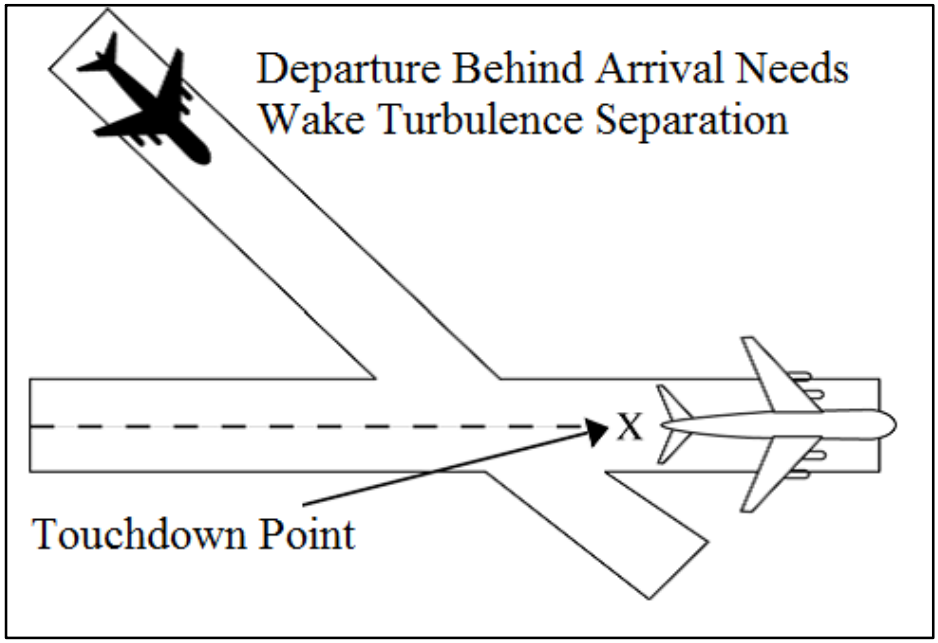
**Departure Behind Arrival on Intersecting Runway**




**NEW**

*FIG 3–9–13*

**Departure Behind Arrival on Intersecting Runway**




**OLD**

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

**Title** through ***FIG 3–9–18***

**WAKE TURBULENCE APPLICATION**

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

**NEW**

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

No Change

No Change

**c.** Separate aircraft taking off behind a **landing or** departing aircraft on a **converging** runway if projected flight paths will cross (See FIG 3–9–19 **and FIG 3–9–20**):

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

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

Add

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

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

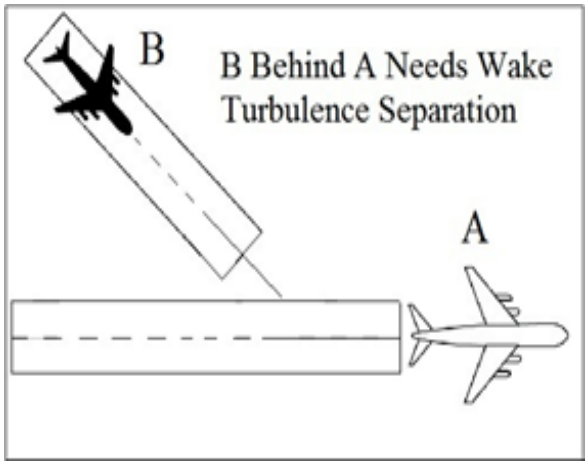
**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

**4**. **Category I aircraft** behind **Category E aircraft** – *2 minutes*.

**OLD**

***FIG 3–9–19***

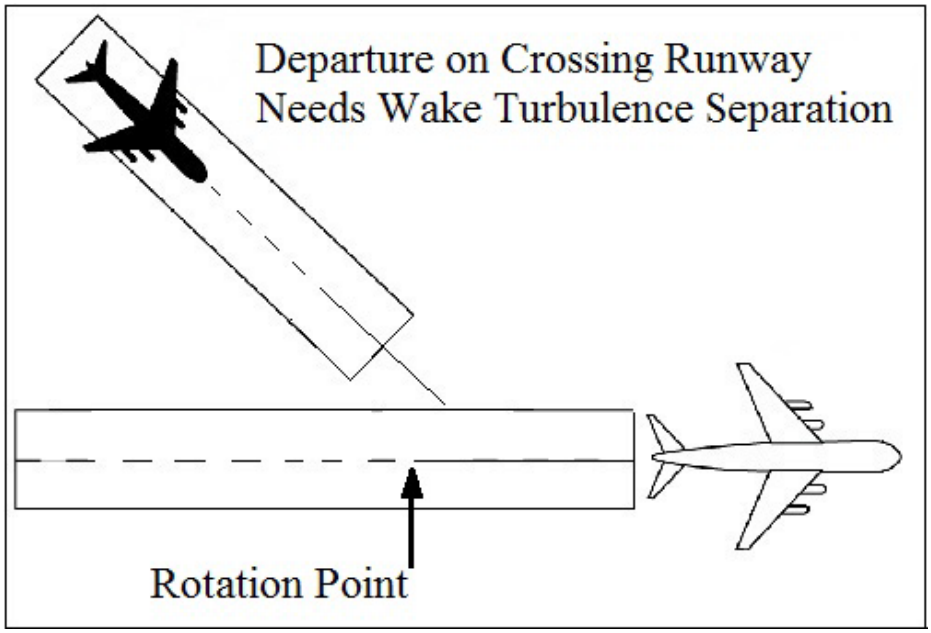
**Intersecting Runway Separation**




**NEW**

***FIG 3–9–19***

**Converging Runway Separation**

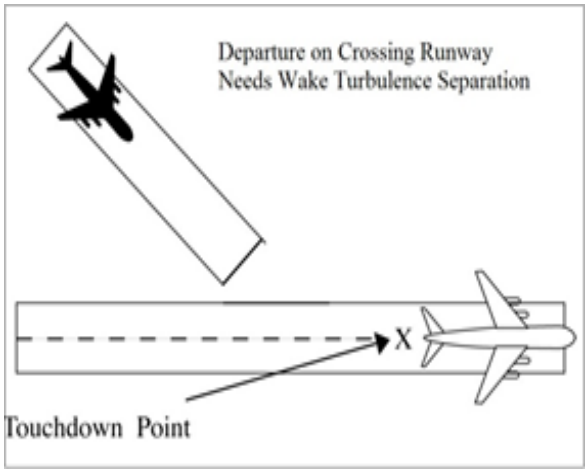


| | |
|---|---|
| ***NOTE–***<br>*Takeoff clearance to the following aircraft should not be issued until the time interval has passed from when the preceding aircraft began takeoff roll.* | No Change |
| **d.** Separate aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3–9–20): | Delete |
| **1.** Heavy, large, or small behind super – *3 minutes*. | Delete |
| **2.** Heavy, large, or small behind heavy – *2 minutes*. | Delete |
| **3.** Small behind B757 – *2 minutes*. | Delete |

**OLD**

***FIG 3–9–20***

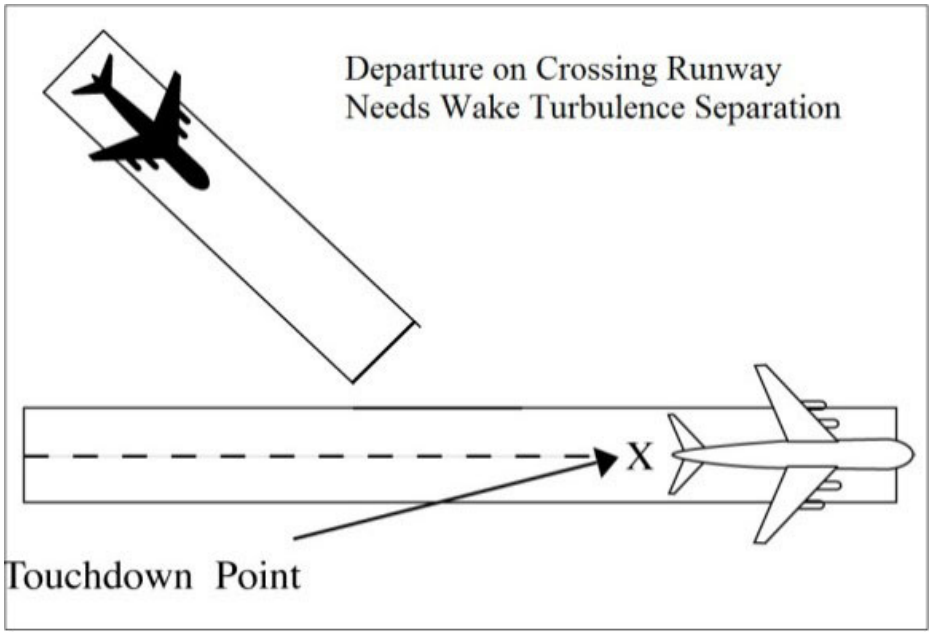
**Intersecting Runway Separation**



**NEW**

***FIG 3–9–20***

**Converging Runway Separation**




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

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

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

No Change

**OLD**

**3–10–3. SAME RUNWAY SEPARATION**

**Title** through **a3**

**WAKE TURBULENCE APPLICATION**

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

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

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

Add

**NEW**

**3–10–3. SAME RUNWAY SEPARATION**

No Change

No Change

**b.** Issue wake turbulence advisories, and the position, altitude if known, and the direction of flight of **departing or arriving aircraft on the same runway or parallel runways separated by less than 2,500 feet to**:

**1. Category B, C, D, E, F, G, H, and I aircraft behind Category A, B, or D aircraft**.

**2. Category E, F, G, H, or I aircraft behind Category C aircraft**.

**3. Category I aircraft behind Category E aircraft.**

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

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

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

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

**OLD**

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

**Title** through **b3**

**WAKE TURBULENCE APPLICATION**

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

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

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

Add

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

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

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

***REFERENCE–***
*AC 90–23, Aircraft Wake Turbulence, Para **11**, Pilot Responsibility.*
*FAA Order JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.*

No Change

No Change

**3**. *"Traffic, heavy **Boeing 787** on 2-mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."*

**NEW**

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

No Change

No Change

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

**1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*.

**2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*.

**3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.***

**4. Category I aircraft** behind **Category E aircraft** – *2 minutes*.

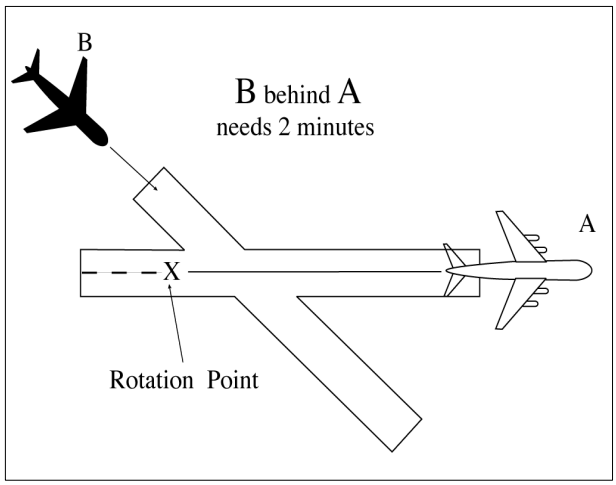
**d.** Issue wake turbulence cautionary advisories, the position, altitude if known, and direction of flight of **Category A, B, C, D, or E aircraft** to:

No Change

**OLD**

*FIG 3–10–11*

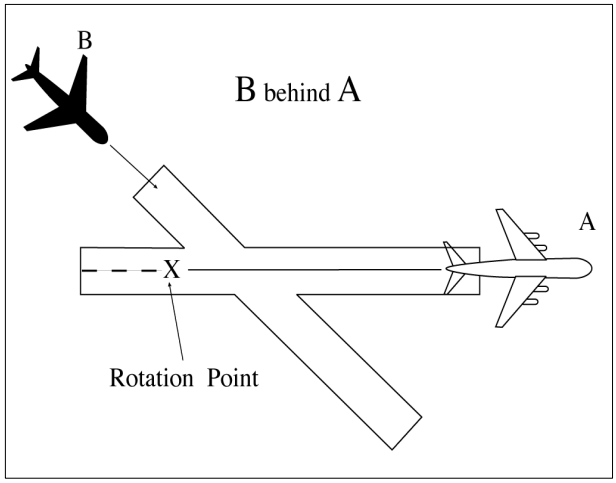
**Intersecting Runway Separation**




**NEW**

*FIG 3–10–11*

**Intersecting Runway Separation**




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

***FIG 3–10–12***

**1.** All aircraft landing on a crossing runway behind a departing **aircraft that requires wake turbulence separation behind it if** the arrival flight path will cross the takeoff path behind the departing aircraft rotation point. (See FIG 3–10–12.)

No Change

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

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

**OLD**

**5–5–4. MINIMA**

**Title** through **a2**

**3.** For single sensor monopulse secondary surveillance radar (MSSR), when less than 60 miles from the antenna– *3 miles*.

***NOTE–***
*Wake turbulence procedures specify increased separation minima required for certain categories of aircraft because of the possible effects of wake turbulence.*

**a4** through **e4(e)**

**WAKE TURBULENCE APPLICATION**

Add

**f.** Separate aircraft operating directly behind or following an aircraft conducting an instrument approach by the minima specified and in accordance with the following:

***NOTE–***
*Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.*

**1.** When operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and less than 1,000 feet below:

**(a)** *TERMINAL.* Behind super:

**(1)** Heavy – *6 miles*.

**(2)** Large – *7 miles*.

**(3)** Small – *8 miles*.

**(b)** *EN ROUTE.* Behind super –*5 miles,* unless the super is operating at or below FL240 and below 250 knots, then:

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

**2.** All VFR aircraft landing on a crossing runway behind an arriving **Category A, B, C, or D aircraft and VFR Category I** aircraft landing on a crossing runway behind a **Category E aircraft,** if the arrival flight paths will cross. (See FIG 3–10–13.)

**NEW**

**5–5–4. MINIMA**

No Change

No Change

Delete

No Change

No Change

***NOTE–***
***Wake turbulence procedures specify increased separation minima required for certain categories of aircraft because of the possible effects of wake turbulence.***

**f. *EN ROUTE*. Provide wake turbulence separation as follows:**

Delete

**1. Separate aircraft operating directly behind, following an aircraft conducting an instrument approach and/or operating within 2,500 feet and less than 1,000 feet below, by the following:**

**(a) Behind super – *5 miles*, unless the super is operating at or below FL240 and below 250 knots, then:**

No Change

No Change

No Change

Delete

| | |
|---|---|
| **(1)** Heavy –*6 miles*. | Delete |
| **(2)** Large – *7 miles*. | Delete |
| **(3)** Small –*8 miles*. | Delete |
| **(c)** Behind heavy: | **(b)** Behind heavy: |
| **(1)** Heavy –*4 miles.* | No Change |
| **(2)** Large or small – *5 miles.* | No Change |
| **2.** Separate small aircraft behind a B757 by *4 miles* when operating within 2,500 feet of the flight path of the leading aircraft over the surface of the earth and/or less than 500 feet below. | **2. Separate a small aircraft behind a B757 – *4 miles* when operating directly behind, following a B757 conducting an instruction approach and/or operating within 2,500 feet and less than 500 feet below.** |
| **3.** *TERMINAL*. When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a small departs the parallel runway behind a B757. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the small to pass behind the B757. | **3. Separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the minima below will exist at the time the preceding aircraft is over the landing threshold. If the landing threshold cannot be determined, the minima should be applied as constant or increasing at the closest point that can be determined prior to the landing threshold.** |
| ***NOTE–***<br>**1.** *The application of paragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement.* | Delete |
| **2.** *Consider runways separated by less than 700 feet as a single runway because of the possible effects of wake turbulence.* | Delete |
| Add | **(a) Small behind large – *4 miles*.** |
| Add | **(b) Small behind heavy – *6 miles*.** |
| Add | ***NOTE–***<br>***Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.*** |
| **WAKE TURBULENCE APPLICATION** | No Change |
| **g.** In addition to subparagraph f, separate an aircraft landing behind another aircraft on the same runway, or one making a touch-and-go, stop-and-go, or low approach by ensuring the following minima will exist at the time the preceding aircraft is over the landing threshold: | **g. *TERMINAL*. Separate aircraft by the minima specified in TBL 5–5–1 in accordance with the following:** |
| ***NOTE–***<br>*Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.* | Delete |
| **1**. Small behind large– *4 miles*. | **1. When following an aircraft conducting an instrument approach and/or operating within 2,500 feet and less than 1,000 feet below the flight path of a Category A, B, C, or D aircraft.** |

| | |
|---|---|
| **2**. Small behind heavy– *6 miles*. | **2. When following an aircraft conducting an instrument approach and/or operating within 2,500 feet and/or less than 500 feet below a Category E aircraft.** |
| If the landing threshold cannot be determined, apply the above minima as constant or increasing at the closest point that can be determined prior to the landing threshold. | Delete |
| Add | **3. When departing parallel runways separated by less than 2,500 feet, the 2,500 feet requirement in subparagraph 2 is not required when a Category I aircraft departs the parallel runway behind a Category E aircraft. Issue a wake turbulence cautionary advisory and instructions that will establish lateral separation in accordance with subparagraph 2. Do not issue instructions that will allow the Category I aircraft to pass behind the Category E aircraft.** |
| Add | ***NOTE–***<br>**1.** ***The application of paragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement.*** |
| Add | **2.** ***Consider runways separated by less than 700 feet as a single runway because of the possible effects of wake turbulence.*** |
| Add | ***REFERENCE–***<br>***FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation.*** |

**OLD**

Add

Add

**NEW**

***TBL 5–5–1***

**Wake Turbulence Separation for Directly Behind**

| | | FOLLOWER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** |
| **LEADER** | **A** | | 5 NM | 6 NM | 6 NM | 7 NM | 7 NM | 7 NM | 8 NM | 8 NM |
| | **B** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 5 NM |
| | **C** | | | | | 3.5 NM | 3.5 NM | 3.5 NM | 5 NM | 5 NM |
| | **D** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 5 NM |
| | **E** | | | | | | | | | 4 NM |
| | **F** | | | | | | | | | |
| | **G** | | | | | | | | | |
| | **H** | | | | | | | | | |
| | **I** | | | | | | | | | |

Add

**h. *TERMINAL*. ON APPROACH. In addition to subparagraph g, separate an aircraft on approach behind another aircraft to the same runway by ensuring the separation minima in TBL 5–5–2 will exist at the time the preceding aircraft is over the landing threshold.**

Add

***NOTE–***
***Consider parallel runways less than 2,500 feet apart as a single runway because of the possible effects of wake turbulence.***

**OLD**

Add

Add

**NEW**

***TBL 5–5–2***

**Wake Turbulence Separation for On Approach**

| | | FOLLOWER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** |
| **LEADER** | **A** | | 5 NM | 6 NM | 6 NM | 7 NM | 7 NM | 7 NM | 8 NM | 8 NM |
| | **B** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 5 NM | 6 NM |
| | **C** | | | | | 3.5 NM | 3.5 NM | 3.5 NM | 5 NM | 6 NM |
| | **D** | | 3 NM | 4 NM | 4 NM | 5 NM | 5 NM | 5 NM | 6 NM | 6 NM |
| | **E** | | | | | | | | | 4 NM |
| | **F** | | | | | | | | | 4 NM |
| | **G** | | | | | | | | | |
| | **H** | | | | | | | | | |
| | **I** | | | | | | | | | |

**h.** *TERMINAL.* When NOWGT is displayed in an aircraft data block, provide *10 miles* separation behind the preceding aircraft and *10 miles* separation to the succeeding aircraft.

***INTERPRETATION–***
*7110.65, 5–5–4, Minima, Wake Turbulence Minima Application (2–23–2023)*
*7110.65, 5–5–4h, Minima (2–21–2023)*

**i.** *TERMINAL.* When NOWGT is displayed in an aircraft data block, provide *10 miles* separation behind the preceding aircraft and *10 miles* separation to the succeeding aircraft.

No Change

**i.** *TERMINAL*. 2.5 nautical miles (NM) separation is authorized between aircraft established on the final approach course within 10 NM of the landing runway when operating in FUSION, or single sensor slant range mode if the aircraft remains within 40 miles of the antenna and:

**1.** The leading aircraft's weight class is the same or less than the trailing aircraft;

**j.** *TERMINAL*. 2.5 nautical miles (NM) separation is authorized between aircraft established on the final approach course within 10 NM of the landing runway when operating in FUSION, or single sensor slant range mode if the aircraft remains within 40 miles of the antenna and:

**1. Wake turbulence separation must be applied in accordance with TBL 5–5–2;**

**2.** Super and heavy aircraft are permitted to participate in the separation reduction as the trailing aircraft only;

**3.** An average runway occupancy time of 50 seconds or less is documented;

Add

**4.** CTRDs are operational and used for quick glance references;

***REFERENCE–***
*FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.*

**5.** Turnoff points are visible from the control tower.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–19, Wake Turbulence.*
*FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation.*
*FAA Order JO 7110.65, Para 5–5–7, Passing or Diverging.*
*FAA Order JO 7110.65, Para 5–5–9, Separation from Obstructions.*
*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*
*FAA Order JO 7110.65, Para 7–6–7, Sequencing.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65 Para 7–8–3, Separation.*
*FAA Order JO 7210.3, Para 10–4–10, Reduced Separation on Final.*

**OLD**

**5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES**

*TERMINAL*

Separate aircraft departing from the same airport/heliport or adjacent airports/heliports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad and courses will diverge by at least the minimum required, as stated below.

Add

**2. An average runway occupancy time of 50 seconds or less is documented**;

**3. CTRDs are operational and used for quick glance references**;

***REFERENCE–***
***FAA Order JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.***

**4. Turnoff points are visible from the control tower.**

Delete

Delete

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–19, Wake Turbulence.*
*FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation.*
*FAA Order JO 7110.65, Para 5–5–7, Passing or Diverging.*
*FAA Order JO 7110.65, Para 5–5–9, Separation from Obstructions.*
*FAA Order JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.*
*FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility.*
*FAA Order JO 7110.65, Para 7–6–7, Sequencing.*
*FAA Order JO 7110.65, Para 7–7–3, Separation.*
*FAA Order JO 7110.65 Para 7–8–3, Separation.*
*FAA Order JO 7210.3, Para 10–4–14, Reduced Separation on Final.*

**NEW**

**5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES**

No Change

No Change

***REFERENCE–***
***FAA Order JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures.***
***FAA Order JO 7110.65, Para 3–9–8, Intersecting Runway/Intersecting Flight Path Operations.***
***FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.***

| | |
|---|---|
| ***NOTE–*** | No Change |
| **1.** *FAA Order 8260.46, Departure Procedure (DP) Program, and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 4, establishes guidelines for IFR departure turning procedures which assumes a climb to 400 feet above the departure end of runway (DER) elevation before a turn is commenced. TERPS criteria ensures obstacle clearance with a climb gradient of 200 feet per nautical mile from the DER. "Immediately after departure" is considered to be any turn that provides at least the minimum required divergence that commences no later than 2 miles from the DER.* | |
| **2.** *Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.* | No Change |
| **3.** *When one or both of the departure surfaces is a helipad, use the takeoff course of the helicopter as a reference, comparable to the centerline of a runway and the helipad center as the threshold.* | No Change |
| **a** through ***FIG 5–8–3*** | No Change |
| ***NOTE–*** | No Change |
| *This procedure does not apply when wake turbulence separation is required.* | |
| ***REFERENCE–*** <br> *FAA Order JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures.* <br> *FAA Order JO 7110.65, Para 3–9–8, Intersecting Runway/Intersecting Flight Path Operations.* <br> *FAA Order JO 7110.65, Para 5–5–4, Minima.* <br> *FAA Order JO 7110.65, Para 5–5–4, Minima, Subparagraph g.* | Delete |

| **OLD** | **NEW** |
|---|---|
| **6–1–4. ADJACENT AIRPORT OPERATIONS** | **6–1–4. ADJACENT AIRPORT OPERATIONS** |
| *TERMINAL* | No Change |
| **WAKE TURBULENCE APPLICATION** | No Change |
| The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following: | **a.** The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following: |
| **a.** Heavy, large, or small behind super – *3 minutes*. | **1. Category B, C, D, E, F, G, H, or I aircraft** behind **Category A aircraft** – *3 minutes*. |
| **b.** Heavy, large, or small behind heavy – *2 minutes*. | **2. Category B, C, D, E, F, G, H, or I aircraft** behind **Category B or D aircraft** – *2 minutes*. |
| Add | **3. Category E, F, G, H, or I aircraft behind Category C aircraft – *2 minutes.*** |
| **c.** Small behind B757 – *2 minutes*. | **4. Category I aircraft behind Category E aircraft** – *2 minutes*. |

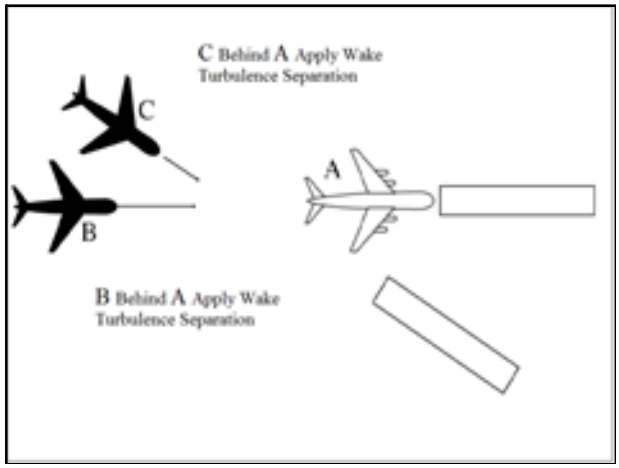
| | |
|---|---|
| Add | **b.** ***EN ROUTE*. The ATC facility having control jurisdiction at adjacent airports must separate arriving or departing IFR aircraft on a course that will cross the flight path of an aircraft requiring wake turbulence separation in accordance with the following:** |
| Add | **1. Heavy, large, or small behind super – *3 minutes*.** |
| Add | **2. Heavy, large, or small behind heavy – *2 minutes*.** |
| Add | **3. Small behind B757 – *2 minutes*.** |
| **OLD** | **NEW** |
| **6–1–5. ARRIVAL MINIMA** | **6–1–5. ARRIVAL MINIMA** |
| *TERMINAL* | No Change |
| **WAKE TURBULENCE APPLICATION** | No Change |
| **a.** Separate IFR aircraft landing behind an arriving aircraft to the same runway: | **a.** Separate IFR aircraft landing behind **other** arriving aircraft to the same runway**, a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross:** |
| **1.** Behind super: | **1. Category B, C, D, E, F, or G aircraft behind Category A aircraft – 3 *minutes*.** |
| **(a)** Heavy or large – *3 minutes.* | Delete |
| **(b)** Small – *4 minutes.* | Delete |
| **2.** Behind heavy: | **2. Category H or I aircraft behind Category A aircraft – 4 *minutes*.** |
| **(a)** Heavy or large – *2 minutes.* | Delete |
| **(b)** Small – *3 minutes.* | Delete |
| **3.** Small behind B757 – *3 minutes.* | **3. Category B, C, D, E, F, or G aircraft behind Category B or D aircraft – 2 *minutes*.** |
| Add | **4. Category E, F, or G aircraft behind Category C aircraft – 2 *minutes*.** |
| Add | **5. Category H or I aircraft behind Category B, C, or D aircraft – 3 *minutes*.** |
| Add | **6. Category I aircraft behind Category E aircraft – 3 *minutes*.** |
| **b.** Separate IFR aircraft landing behind an arriving aircraft to a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross: | **b.** ***EN ROUTE*. Separate IFR aircraft landing behind an arriving aircraft to the same runway:** |
| **1.** Heavy, large, or small behind super – *3 minutes*. | **1. Behind super:** |
| Add | **(a) Heavy or large – *3 minutes*.** |
| Add | **(b) Small – *4 minutes*.** |
| **2.** Heavy, large, or small behind heavy – *2 minutes*. | **2. Behind heavy:** |

| | |
|---|---|
| Add | **(a) Heavy or large – *2 minutes*.** |
| Add | **(b) Small – *3 minutes*.** |
| **3.** Small behind B757 – *2 minutes*. | **3.** Small behind B757 – ***3*** *minutes.* |
| Add | **c. *EN ROUTE*. Separate IFR aircraft landing behind an arriving aircraft to a parallel runway separated by less than 2,500 feet, or a crossing runway if projected flight paths will cross:** |
| Add | **1. Heavy, large, or small behind super – *3 minutes*.** |
| Add | **2. Heavy, large, or small behind heavy – *2 minutes*.** |
| Add | **3. Small behind B757 – *2 minutes*.** |

**OLD**

***FIG 6–1–3***

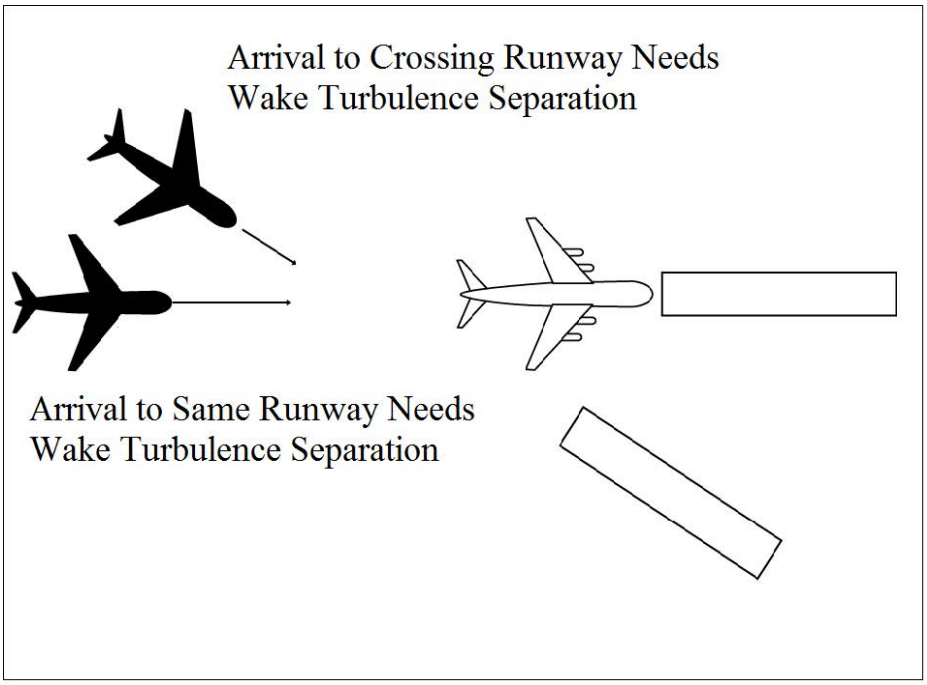
**Arrival Minima Landing Behind an Arriving Aircraft Requiring Wake Turbulence Separation**



**NEW**

***FIG 6–1–3***

**Arrival Minima Landing Behind an Arriving Aircraft Requiring Wake Turbulence Separation**




| OLD | NEW |
|---|---|
| **6–7–5. INTERVAL MINIMA** | **6–7–5. INTERVAL MINIMA** |
| **Title** through **a *REFERENCE*** | No Change |
| **WAKE TURBULENCE APPLICATION** | No Change |
| **b.** Use the following time or radar interval as the minimum interval: | **b. *EN ROUTE.*** Use the following time or radar interval as the minimum interval: |
| **b1** through **b2** | No Change |
| Add | **c. *TERMINAL*. Use the following times or radar intervals as the minimum:** |
| Add | **1. Behind Category A aircraft:** |
| Add | **(a) Category B, C, or D aircraft – 3 minutes or 6 miles.** |
| Add | **(b) Category E, F, or G aircraft – 3 minutes or 7 miles.** |
| Add | **(c) Category H or I aircraft – 4 minutes or 8 miles.** |
| Add | **2. Category H or I aircraft behind Category B, C, or D aircraft – 3 *minutes* or 6 *miles*.** |
| **c.** Increase the interval, as necessary, taking into account the: | **d**. Increase the interval as necessary, **considering the following**: |

**OLD**

**7–4–3. CLEARANCE FOR VISUAL APPROACH**

**Title** through **c4** ***REFERENCE***

**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 Juliett, following a Boeing 757, 12 o'clock, six miles."*

*or*

*"Cessna Three Four Juliett, following a Seven fifty seven, 12 o'clock, six miles."*

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

**NEW**

**7–4–3. CLEARANCE FOR VISUAL APPROACH**

No Change

**d. Inform the trailing aircraft of the lead aircraft's** manufacturer and/or model **when wake turbulence separation is required**.

***EXAMPLE–***
*"Cessna Three Four Juliet, following a heavy Boeing 747, 12 o'clock, seven miles."*

*or*

*"Cessna Three Four Juliet, following a Seven-Fifty-Seven, 12 o'clock, four miles."*

***REFERENCE–***
*FAA Order JO 7110.65, Para.2–4–21, Description of Aircraft Types.*
***FAA Order JO 7110.65, Para 5–5–4, Minima, Subpara g.***

No Change

No Change

**OLD**

**7–6–7. SEQUENCING**

**Title** through **c1**

**2.** When parallel runways are less than 2,500 feet apart, do not permit a super or heavy aircraft to overtake any aircraft, nor a B757 or other large aircraft to overtake a small aircraft established on final within the facility's area of responsibility.

**NEW**

**7–6–7. SEQUENCING**

No Change

**2.** When parallel runways are less than 2,500 feet apart, do not permit **an aircraft to overtake another aircraft** established on final within the facility's area of responsibility **when wake turbulence separation is required**.

---

**1. PARAGRAPH NUMBER AND TITLE:** 2–6–4. ISSUING WEATHER AND CHAFF AREAS

**2. BACKGROUND:** En route controllers use FAA Order JO 7110.65, subparagraph 2–6–4g, when describing the precipitation intensity levels generated by Weather and Radar Processor (WARP). Air Route Surveillance Radar (ARSR) was the only weather radar data source available when originally written. WARP now receives weather data from multiple sources and then displays the precipitation described by controllers when using subparagraph g.

**3. CHANGE:**

**OLD**

**2–6–4. ISSUING WEATHER AND CHAFF AREAS**

**Title** through **f** ***NOTE***

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

**NEW**

**2–6–4. ISSUING WEATHER AND CHAFF AREAS**

No Change

**g.** *EN ROUTE*. When issuing precipitation intensity**,** use the following:

**1. PARAGRAPH NUMBER AND TITLE:**
3−9−6. SAME RUNWAY SEPARATION
3–10–3. SAME RUNWAY SEPARATION
3–10–11. CLOSED TRAFFIC
3–11–1. TAXI AND GROUND MOVEMENT OPERATION
3–11–2. HELICOPTER TAKEOFF CLEARANCE
3–11–3. HELICOPTER DEPARTURE SEPARATION
3–11–4. HELICOPTER ARRIVAL SEPARATION
3–11–5. SIMULTANEOUS LANDINGS OR TAKEOFFS
3–11–6. HELICOPTER LANDING CLEARANCE
5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES
5–8–5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS
5–11–2. VISUAL REFERENCE REPORT
6–2–1. MINIMA ON DIVERGING COURSES
7–4–7. CONTACT APPROACH
7–5–1. AUTHORIZATION
7–5–4. ALTITUDE ASSIGNMENT
7−5−7. GROUND VISIBILITY BELOW 1 MILE
7−5−8. FLIGHT VISIBILITY BELOW 1 MILE
7–7–4. HELICOPTER TRAFFIC
7–7–5. ALTITUDE ASSIGNMENTS
7–8–6. EXCEPTIONS
7–9–4. SEPARATION
7–9–6. HELICOPTER TRAFFIC
7–9–7. ALTITUDE ASSIGNMENTS

**2. BACKGROUND:** The Air Traffic Organization (ATO) Urban Air Mobility (UAM) Near-Term Operational Integration Workgroup (NTI WG) was established in November 2021 to review, develop, and consider procedures or services that will enable the safe and efficient integration of UAM operations into the National Airspace System (NAS). A workgroup was established to conduct a review of FAA Order JO 7110.65, Air Traffic Control, to identify air traffic services, terms, and definitions applicable to UAM operations and to recommend amendments to specific sections of the order. Currently, two types of air traffic services are provided: fixed-wing and helicopter. With the exception of the V−22 Osprey, an aircraft only receives one service or the other in all phases of flight. Aircraft used in UAM operations will be certified as either powered-lift aircraft or helicopter/rotorcraft under 14 CFR § 21.17(b). Powered-lift aircraft are aircraft able to take off and land vertically and are able to operate in either vertical lift mode or use a fixed-wing for horizontal flight. Powered-lift aircraft will be able to utilize identified procedures currently only approved for helicopters. The aircraft certification process will inform which designation (helicopter/rotocraft, fixed wing, or powered-lift), will be assigned in FAA Order JO 7360.1, Aircraft Type Designators. The term “tiltrotor” will also be removed from FAA Order JO 7360.1, as all aircraft currently designated as tiltrotor aircraft will be recategorized as powered lift aircraft. This initiative addresses items identified in Sec.957. POWERED-LIFT AIRCRAFT ENTRY INTO SERVICE, (b)(1) of the 2024 FAA Reauthorization.

**3. CHANGE:**

**OLD**

**3–9–6. SAME RUNWAY SEPARATION**

**Title** through **a4**

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

**NEW**

**3–9–6. SAME RUNWAY SEPARATION**

No Change

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

**OLD**

**3–10–3. SAME RUNWAY SEPARATION**

**Title** through ***FIG 3–10–5***

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

**NEW**

**3–10–3. SAME RUNWAY SEPARATION**

No Change

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

**OLD**

**3–10–11. CLOSED TRAFFIC**

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

***PHRASEOLOGY–***

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

*or*

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

***NOTE–***

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

***REFERENCE–***

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

**NEW**

**3–10–11. CLOSED TRAFFIC**

No Change

No Change

***NOTE–***

*Segregated traffic patterns for helicopters **and powered-lift aircraft** to runways and other areas may be established by letter of agreement or other local operating procedures.*

No Change

**OLD**

**3–11–1. TAXI AND GROUND MOVEMENT OPERATION**

**a.** When necessary for a wheeled helicopter to taxi on the surface, use the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

**NEW**

**3–11–1. TAXI AND GROUND MOVEMENT OPERATION**

**a.** When necessary for a wheeled helicopter **or powered-lift aircraft** to taxi on the surface, use the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

***NOTE–***
*Ground taxiing uses less fuel than hover-taxiing and minimizes air turbulence. However, under certain conditions, such as rough, soft, or uneven terrain, it may become necessary to hover/air-taxi for safety considerations. Helicopters with articulating rotors (usually designs with three or more main rotor blades) are subject to "ground resonance" and may, on rare occasions, suddenly lift off the ground to avoid severe damage or destruction.*

No Change

**b.** When requested or necessary for a helicopter/VTOL aircraft to proceed at a slow speed above the surface, normally below 20 knots and in ground effect, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

**b.** When requested or necessary for a helicopter **or powered-lift** aircraft to proceed at a slow speed above the surface, normally below 20 knots and in ground effect, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

***PHRASEOLOGY–***
*HOVER-TAXI (supplemented, as appropriate, from paragraph 3–7–2, Taxi and Ground Movement Operations.)*

*CAUTION (dust, blowing snow, loose debris, taxiing light aircraft, personnel, etc.).*

No Change

***NOTE–***
*Hover-taxiing consumes fuel at a high burn rate, and helicopter downwash turbulence (produced in ground effect) increases significantly with larger and heavier helicopters.*

No Change

***REFERENCE–***
*P/CG Term– Hover Taxi.*
*AIM, Para 4–3–17, VFR Helicopter Operations at Controlled Airports.*

No Change

**c.** When requested or necessary for a helicopter to proceed expeditiously from one point to another, normally below 100 feet AGL and at airspeeds above 20 knots, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

**c.** When requested or necessary for a helicopter **or powered-lift aircraft** to proceed expeditiously from one point to another, normally below 100 feet AGL and at airspeeds above 20 knots, use the following phraseology, supplemented as appropriate with the phraseology in paragraph 3–7–2, Taxi and Ground Movement Operations.

| | |
|---|---|
| ***PHRASEOLOGY–***<br>*AIR-TAXI:* | ***PHRASEOLOGY–***<br>*AIR-TAXI:* |
| *VIA (direct, as requested, or specified route)* | *VIA (direct, as requested, or specified route)* |
| *TO (location, heliport, helipad, operating/movement area, active/inactive runway).* | *TO (location, heliport, helipad, **vertiport, vertipad** operating/movement area, active/inactive runway).* |
| *AVOID (aircraft/vehicles/personnel). If required,* | *AVOID (aircraft/vehicles/personnel). If required,* |
| *REMAIN AT OR BELOW (altitude).* | *REMAIN AT OR BELOW (altitude).* |
| *CAUTION (wake turbulence or other reasons above).* | *CAUTION (wake turbulence or other reasons above).* |
| *LAND AND CONTACT TOWER,* | *LAND AND CONTACT TOWER,* |
| *or* | *or* |
| *HOLD FOR (reason– takeoff clearance, release, landing/taxiing aircraft, etc.).* | *HOLD FOR (reason– takeoff clearance, release, landing/taxiing aircraft, etc.)* |
| ***NOTE–***<br>*Air-taxi is the preferred method for helicopter movements on airports provided ground operations/conditions permit. Air-taxi authorizes the pilot to proceed above the surface either via hover-taxi or flight at speeds more than 20 knots. Unless otherwise requested or instructed, the pilot is expected to remain below 100 feet AGL. The pilot is solely responsible for selecting a safe airspeed for the altitude/operation being conducted.* | No Change |
| ***REFERENCE–***<br>*P/CG Term – Air Taxi.*<br>*AIM, Para 4–3–17, VFR Helicopter Operations at Controlled Airports.* | No Change |

| **OLD** | **NEW** |
|---|---|
| **3–11–2. HELICOPTER TAKEOFF CLEARANCE** | **3–11–2. HELICOPTER/POWERED-LIFT TAKEOFF CLEARANCE** |
| **a.** Issue takeoff clearances from movement areas other than active runways or in diverse directions from active runways, with additional instructions as necessary. Whenever possible, issue takeoff clearance in lieu of extended hover-taxi or air-taxi operations. | **a.** Issue **helicopter or powered-lift** takeoff clearances from movement areas other than active runways or in diverse directions from active runways, with additional instructions as necessary. Whenever possible, issue takeoff clearance in lieu of extended hover-taxi or air-taxi operations. |

***PHRASEOLOGY–***
*(Present position, taxiway, helipad, numbers) MAKE RIGHT/LEFT TURN FOR (direction, points of compass, heading, NAVAID radial) DEPARTURE/DEPARTURE ROUTE (number, name, or code), AVOID (aircraft/vehicles/personnel),*

*or*

*REMAIN (direction) OF (active runways, parking areas, passenger terminals, etc.).*

*CAUTION (power lines, unlighted obstructions, trees, wake turbulence, etc.).*

*CLEARED FOR TAKEOFF.*

**b.** If takeoff is requested from non–movement areas, an area not authorized for helicopter use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the takeoff clearance in subparagraph a.

***PHRASEOLOGY–***
*DEPARTURE FROM (requested location) WILL BE AT YOUR OWN RISK (additional instructions, as necessary). USE CAUTION (if applicable).*

No Change

**b.** If takeoff is requested from non-movement areas, an area not authorized for helicopter **or powered-lift aircraft** use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the takeoff clearance in subparagraph a.

No Change

**OLD**

**3–11–3. HELICOPTER DEPARTURE SEPARATION**

Separate a departing helicopter from other helicopters by ensuring that it does not takeoff until one of the following conditions exists:

***NOTE–***
*Helicopters performing air-taxiing operations within the boundary of the airport are considered to be taxiing aircraft.*

**a.** A preceding, departing helicopter has left the takeoff area. (See FIG 3–11–1.)

***FIG 3–11–1***

**b.** A preceding, arriving helicopter has taxied off the landing area. (See FIG 3–11–2.)

**NEW**

**3–11–3. HELICOPTER/POWERED-LIFT DEPARTURE SEPARATION**

Separate a departing helicopter **or powered-lift aircraft** from other helicopters **or powered-lift aircraft** by ensuring that it does not takeoff until one of the following conditions exists:

***NOTE–***
*Helicopters **or powered-lift aircraft** performing air-taxiing operations within the boundary of the airport are considered to be taxiing aircraft.*

**a.** A preceding, departing helicopter **or powered-lift aircraft** has left the takeoff area. (See FIG 3–11–1.)

No Change

**b.** A preceding, arriving helicopter **or powered-lift aircraft** has taxied off the landing area. (See FIG 3–11–2.)

**OLD**

**3–11–4. HELICOPTER ARRIVAL SEPARATION**

Separate an arriving helicopter from other helicopters by ensuring that it does not land until one of the following conditions exists:

**a.** A preceding, arriving helicopter has come to a stop or taxied off the landing area. (See FIG 3–11–3 and FIG 3–11–4)

***FIG 3–11–3*** through ***FIG 3–11–4***

**b.** A preceding, departing helicopter has left the landing area. (See FIG 3–11–5.)

**NEW**

**3–11–4. HELICOPTER/POWERED-LIFT ARRIVAL SEPARATION**

Separate an arriving helicopter **or powered-lift aircraft** from other helicopters **or powered-lift aircraft** by ensuring that it does not land until one of the following conditions exists:

**a.** A preceding, arriving helicopter **or powered-lift aircraft** has come to a stop or taxied off the landing area. (See FIG 3–11–3 and FIG 3–11–4)

No Change

**b.** A preceding, departing helicopter **or powered-lift aircraft** has left the landing area. (See FIG 3–11–5.)

**OLD**

**3–11–5. SIMULTANEOUS LANDINGS OR TAKEOFFS**

Authorize helicopters to conduct simultaneous landings or takeoffs if the distance between the landing or takeoff points is at least 200 feet and the courses to be flown do not conflict. Refer to surface markings to determine the 200 foot minimum, or instruct a helicopter to remain at least 200 feet from another helicopter. (See FIG 3–11–6.)

**NEW**

**3–11–5. SIMULTANEOUS LANDINGS OR TAKEOFFS**

Authorize helicopters **or powered-lift aircraft** to conduct simultaneous landings or takeoffs if the distance between the landing or takeoff points is at least 200 feet and the courses to be flown do not conflict. Refer to surface markings to determine the 200 foot minimum or instruct a helicopter **or powered-lift aircraft** to remain at least 200 feet from another helicopter **or powered-lift aircraft**. (See FIG 3–11–6.)

**OLD**

**3–11–6. HELICOPTER LANDING CLEARANCE**

**a.** Issue landing clearances to helicopters going to movement areas other than active runways or from diverse directions to points on active runways, with additional instructions as necessary. Whenever possible, issue a landing clearance in lieu of extended hover-taxi or air-taxi operations.

**NEW**

**3–11–6. HELICOPTER/POWERED-LIFT LANDING CLEARANCE**

**a.** Issue landing clearances to helicopters **or powered-lift aircraft** going to movement areas other than active runways or from diverse directions to points on active runways, with additional instructions as necessary. Whenever possible, issue a landing clearance in lieu of extended hover-taxi or air-taxi operations.

***PHRASEOLOGY–***
*MAKE APPROACH STRAIGHT–IN/CIRCLING LEFT/RIGHT TURN TO (location, runway, taxiway, helipad, Maltese cross) ARRIVAL/ARRIVAL ROUTE (number, name, or code).*

*HOLD SHORT OF (active runway, extended runway centerline, other).*

*REMAIN (direction/distance; e.g., 700 feet, 1 1/2 miles) OF/FROM (runway, runway centerline, other helicopter/aircraft).*

*CAUTION (power lines, unlighted obstructions, wake turbulence, etc.).*

*CLEARED TO LAND.*

**b.** If landing is requested to non-movement areas, an area not authorized for helicopter use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the landing clearance in subparagraph a.

***PHRASEOLOGY–***
*LANDING AT (requested location) WILL BE AT YOUR OWN RISK (additional instructions, as necessary).*
*USE CAUTION (if applicable).*

***PHRASEOLOGY–***
*MAKE APPROACH STRAIGHT-IN/CIRCLING LEFT/RIGHT TURN TO (location, runway, taxiway, helipad, **vertipad,** Maltese cross) ARRIVAL/ARRIVAL ROUTE (number, name, or code).*

*HOLD SHORT OF (active runway, extended runway centerline, other).*

*REMAIN (direction/distance; e.g., 700 feet, 1 1/2 miles) OF/FROM (runway, runway centerline, other helicopter/aircraft).*

*CAUTION (power lines, unlighted obstructions, wake turbulence, etc.).*

*CLEARED TO LAND.*

**b.** If landing is requested to non-movement areas, an area not authorized for helicopter **or powered-lift aircraft** use, or an area off the airport, and, in your judgment, the operation appears to be reasonable, use the following phraseology instead of the landing clearance in subparagraph a.

No Change

**OLD**

**5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES**

*TERMINAL*

Separate aircraft departing from the same airport/heliport or adjacent airports/heliports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad and courses will diverge by at least the minimum required, as stated below.

***NOTE–***
**1.** *FAA Order 8260.46, Departure Procedure (DP) Program, and FAA Order 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 4, establishes guidelines for IFR departure turning procedures which assumes a climb to 400 feet above the departure end of runway (DER) elevation before a turn is commenced. TERPS criteria ensures obstacle clearance with a climb gradient of 200 feet per nautical mile from the DER. "Immediately after departure" is considered to be any turn that provides at least the minimum required divergence that commences no later than 2 miles from the DER.*

**NEW**

**5–8–3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES**

No Change

Separate aircraft departing from the same airport/heliport/**vertiport** or adjacent airports/heliports/**vertiports** in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad/**vertipad** and courses will diverge by at least the minimum required, as stated below.

No Change

**2.** *Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.*

No Change

**3.** *When one or both of the departure surfaces is a helipad, use the takeoff course of the helicopter as a reference, comparable to the centerline of a runway and the helipad center as the threshold.*

**3.** *When one or both of the departure surfaces is a helipad/**vertipad**, use the takeoff course as a reference, comparable to the centerline of a runway and the helipad/**vertipad** center as the threshold.*

**a.** Between successive departures from the same runway/helipad or parallel runways/helicopter takeoff courses separated by less than 2,500 feet– *1 mile* if courses diverge by 15 degrees or more immediately after departure. (See FIG 5–8–1, FIG 5–8–2, and FIG 5–8–3.)

**a.** Between successive departures from the same runway/helipad/**vertipad** or parallel runways/takeoff courses separated by less than 2,500 feet– *1 mile* if courses diverge by 15 degrees or more immediately after departure. (See FIG 5–8–1, FIG 5–8–2, and FIG 5–8–3.)

***FIG 5–8–1*** through ***FIG 5–8–3 REFERENCE***

No Change

**b.** Between simultaneous departures departing in the same direction from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 15 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

**b.** Between simultaneous departures departing in the same direction from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 15 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–5–4, Minima, Subparagraph f.*

No Change

**c** through **c1** ***NOTE***

No Change

**2.** Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 700 feet and less than 2,500 feet, courses diverge by 15 degrees or more, and departures are released in accordance with the release distance stagger stated in TBL 5–8–1 below.

**2.** Between simultaneous departures from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 700 feet and less than 2,500 feet, courses diverge by 15 degrees or more, and departures are released in accordance with the release distance stagger stated in TBL 5–8–1 below.

***TBL 5–8–1*** through ***FIG 5–8–4***

No Change

**3.** Between simultaneous departures from parallel runways/helicopter takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

**3.** Between simultaneous departures from parallel runways/takeoff courses, authorize simultaneous takeoffs if the centerlines/takeoff courses are separated by at least 2,500 feet and courses diverge by 10 degrees or more immediately after departure. (See FIG 5–8–5, and FIG 5–8–6.)

***NOTE–***
*RNAV SIDs specific to this paragraph are those SIDs constructed with a specific lateral path that begins at the DER.*

No Change

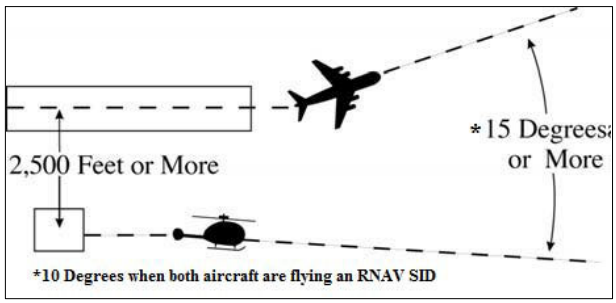
***FIG 5–8–5***

No Change

**OLD**

*FIG 5−8−6*

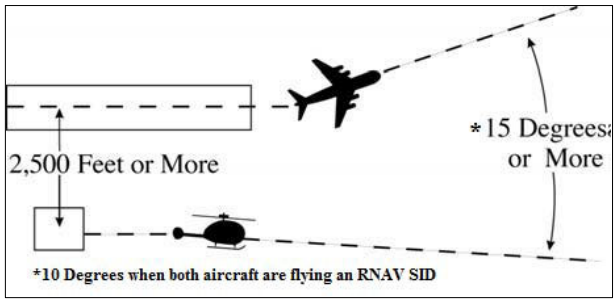
**Parallel Helicopter Course Departures**




**NEW**

*FIG 5−8−6*

**Parallel Helipad/Vertipad Course Departures**

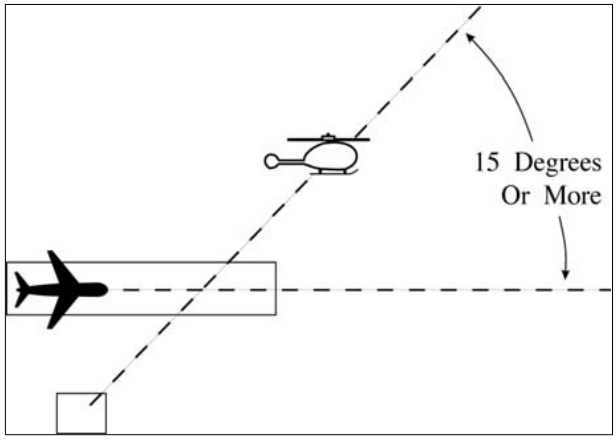



| | |
|---|---|
| **d** through ***FIG 5−8−7*** | No Change |
| **2.** Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3−9−5, Anticipating Separation. (See FIG 5−8−8 and FIG 5−8−9.) | **2.** Intersecting runways and/or takeoff courses **that** diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in paragraph 3−9−5, Anticipating Separation. (See FIG 5−8−8 and FIG 5−8−9.) |
| ***FIG 5−8−8*** | No Change |

**OLD**

*FIG 5−8−9*

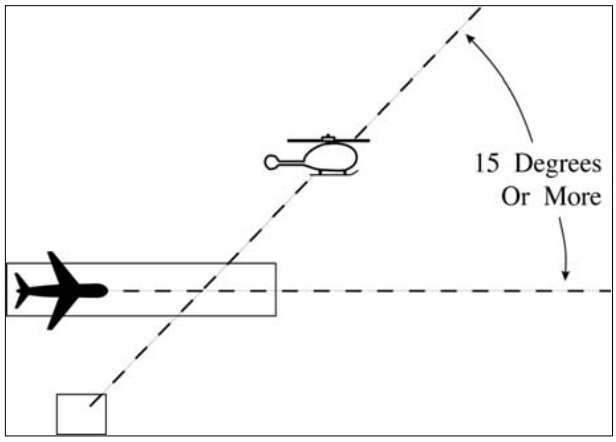
**Intersecting Helicopter Course Departures**




**NEW**

*FIG 5−8−9*

**Intersecting Helipad/Vertipad Course Departures**




***NOTE−***
*This procedure does not apply when wake turbulence separation is required.*

No Change

***REFERENCE−***
*FAA Order JO 7110.65, Para 5−5−4, Minima, Subparagraph f.*

No Change

**OLD**

**5–8–5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS**

*TERMINAL*. Authorize simultaneous operations between an aircraft departing on a runway and an aircraft on final approach to another parallel or nonintersecting diverging runway if the departure course diverges immediately by at least 30 degrees from the missed approach course until separation is applied and provided one of the following conditions is met:

***NOTE–***
*When one or both of the takeoff/landing surfaces is a helipad, consider the helicopter takeoff course as the runway centerline and the helipad center as the threshold.*

**a** through ***FIG 5–8–15***

**d.** When the aircraft on takeoff is a helicopter, hold the helicopter until visual separation is possible or apply the separation criteria in subparagraphs a, b, or c.

***REFERENCE–***
*FAA Order JO 7110.65, Para 5–8–4, Departure and Arrival.*

**NEW**

**5–8–5. DEPARTURES AND ARRIVALS ON PARALLEL OR NONINTERSECTING DIVERGING RUNWAYS**

No Change

***NOTE–***
*When one or both of the takeoff/landing surfaces is a helipad **or vertipad**, consider the takeoff course as the runway centerline and the helipad/**vertipad** center as the threshold.*

No Change

**d.** When the aircraft on takeoff is a helicopter **or powered-lift**, hold the **departure** until visual separation is possible or apply the separation criteria in subparagraphs a, b, or c.

No Change

**OLD**

**5–11–2. VISUAL REFERENCE REPORT**

Aircraft may be requested to report the runway, approach/runway lights, or airport in sight. Helicopters making a "point-in-space" approach may be requested to report when able to proceed to the landing area by visual reference to a prescribed surface route.

***PHRASEOLOGY–***
*REPORT (runway, approach/runway lights or airport) IN SIGHT.*

*REPORT WHEN ABLE TO PROCEED VISUALLY TO AIRPORT/HELIPORT.*

**NEW**

**5–11–2. VISUAL REFERENCE REPORT**

Aircraft may be requested to report the runway, approach/runway lights, or airport in sight. Helicopters **and powered-lift aircraft** making a "point-in-space" approach may be requested to report when able to proceed to the landing area by visual reference to a prescribed surface route.

***PHRASEOLOGY–***
*REPORT (runway, approach/runway lights, or airport) IN SIGHT.*

*REPORT WHEN ABLE TO PROCEED VISUALLY TO AIRPORT/HELIPORT/**VERTIPORT**.*

**OLD**

**6–2–1. MINIMA ON DIVERGING COURSES**

Separate aircraft that will fly courses diverging by 45 degrees or more after departing the same or adjacent airports by use of one of the following minima:

**NEW**

**6–2–1. MINIMA ON DIVERGING COURSES**

No Change

| | |
|---|---|
| ***NOTE–*** | No Change |
| **1.** *Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.* | |
| **2.** *When one or both of the departure surfaces is a helipad, use the takeoff course of the helicopter as a reference, comparable to the centerline of a runway and the helipad center as the threshold.* | **2.** *When one or both of the departure surfaces is a helipad **or vertipad**, use the takeoff course as a reference, comparable to the centerline of a runway, and the helipad/**vertipad** center as the threshold.* |
| **OLD** | **NEW** |
| **7–4–7. CONTACT APPROACH** | **7–4–7. CONTACT APPROACH** |
| **Title** through **c** | No Change |
| **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. | No Change |
| ***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 (b) and (c) above if the operation is conducted without hazard to persons or property on the surface.* | Delete |
| Add | ***REFERENCE–*** ***14 CFR Section 91.119, Minimum Safe Altitudes: General.*** ***14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*** |
| **OLD** | **NEW** |
| **7–5–1. AUTHORIZATION** | **7–5–1. AUTHORIZATION** |
| **a.** SVFR operations in weather conditions less than basic VFR minima are authorized: | No Change |
| ***REFERENCE–*** *FAA Order JO 7110.65, Para 2–1–4, Operational Priority.* *FAA Order JO 7400.11, Airspace Designations and Reporting Points.* *14 CFR Section 91.157, Special SVFR Weather Minimums.* | ***REFERENCE–*** *FAA Order JO 7110.65, Para 2–1–4, Operational Priority.* *FAA Order JO 7400.11, Airspace Designations and Reporting Points.* *14 CFR Section 91.157, Special SVFR Weather Minimums.* ***14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.*** |
| **1.** At any location not prohibited by 14 CFR part 91, Appendix D or when an exemption to 14 CFR part 91 has been granted and an associated LOA established. 14 CFR part 91 does not prohibit SVFR helicopter operations. | No Change |

Add

**2. Powered-lift aircraft, for the purposes of SVFR operations contained in this section, must be handled as helicopters.**

**a2** through **a5** ***REFERENCE***

Renumber **a3** through **a6** ***REFERENCE***

| OLD | NEW |
|---|---|
| **7–5–4. ALTITUDE ASSIGNMENT** | **7–5–4. ALTITUDE ASSIGNMENT** |
| Do not assign a fixed altitude when applying vertical separation, but clear the SVFR aircraft at or below an altitude which is at least 500 feet below any conflicting IFR traffic but not below the MSA prescribed in 14 CFR section 91.119. | No Change |
| ***PHRASEOLOGY–***<br>*MAINTAIN SPECIAL V–F–R CONDITIONS AT OR BELOW (altitude).* | No Change |
| ***NOTE–***<br>**1.** *SVFR aircraft are not assigned fixed altitudes to maintain because of the clearance from clouds requirement.* | ***NOTE–***<br>*SVFR aircraft are not assigned fixed altitudes to maintain because of the clearance from clouds requirement.* |
| **2.** *The MSAs are:*<br>*(a) Over congested areas, an altitude at least 1,000 feet above the highest obstacle, and*<br>*(b) Over other than congested areas, an altitude at least 500 feet above the surface.*<br>*(c) Helicopters may be operated at less than the minimum altitudes prescribed in (a) and (b) above.* | Delete |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*<br>*FAA Order JO 7110.65, Para 5–6–1, Application.*<br>*14 CFR Section 91.119, Minimum Safe Altitudes: General.* | No Change |

| OLD | NEW |
|---|---|
| **7–5–7. GROUND VISIBILITY BELOW 1 MILE** | **7–5–7. GROUND VISIBILITY BELOW 1 MILE** |
| **Title** through **b** | No Change |
| **c.** Inform arriving aircraft, operating VFR/SVFR within a Class B, Class C, Class D, or Class E surface area, that ground visibility is less than 1 mile and request the pilot to advise intentions. | No Change |
| ***PHRASEOLOGY–***<br>*(Name of airport) VISIBILITY LESS THAN 1 MILE. ADVISE INTENTIONS.* | No Change |

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when ground visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

**OLD**

**7–5–8. FLIGHT VISIBILITY BELOW 1 MILE**

**Title** through **b**

**c.** Request the intentions of an arriving aircraft operating within a Class B, Class C, Class D, or Class E surface area.

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters **or powered-lift aircraft**) from landing at any airport within a surface area when ground visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

**NEW**

**7–5–8. FLIGHT VISIBILITY BELOW 1 MILE**

No Change

No Change

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters) from landing at any airport within a surface area when flight visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

***NOTE–***
*Clear an aircraft to land at an airport with an operating control tower, traffic permitting, if the pilot reports the airport in sight. The pilot is responsible to continue to the airport or exit the surface area. 14 CFR section 91.157 prohibits VFR aircraft (other than helicopters **or powered-lift aircraft**) from landing at any airport within a surface area when flight visibility is less than 1 mile. A pilot could inadvertently encounter conditions that are below SVFR minimums after entering a surface area due to rapidly changing weather. The pilot is best suited to determine the action to be taken since pilots operating under SVFR between sunrise and sunset are not required to be instrument rated, and the possibility exists that flight visibility may not be the same as ground visibility. 14 CFR section 91.3 authorizes a pilot encountering an inflight emergency requiring immediate action to deviate from any rule of 14 CFR part 91 to the extent required to meet that emergency. Flight into adverse weather conditions may require the pilot to execute the emergency authority granted in 14 CFR section 91.3 and continue inbound to land.*

No Change

**OLD**

**7–7–4. HELICOPTER TRAFFIC**

Helicopters need not be separated from other helicopters. Traffic information must be exchanged, as necessary.

***REFERENCE–***
*FAA Order JO 7110.65, Para 2–1–4, Operational Priority.*

**NEW**

**7–7–4. HELICOPTER/POWERED-LIFT TRAFFIC**

Helicopters **and powered-lift aircraft** need not be separated from other helicopters **or powered-lift aircraft**. Traffic information must be exchanged, as necessary.

No Change

**OLD**

**7–7–5. ALTITUDE ASSIGNMENTS**

**Title** through **a** ***REFERENCE***

**b.** If required, issue altitude assignments, consistent with the provisions of 14 CFR section 91.119.

***NOTE–***
*The MSAs are:*

**1.** *Over congested areas, an altitude at least 1,000 feet above the highest obstacle; and*

**2.** *Over other than congested areas, an altitude at least 500 feet above the surface.*

Add

**NEW**

**7–7–5. ALTITUDE ASSIGNMENTS**

No Change

No Change

Delete

***REFERENCE–***
***14 CFR Section 91.119, Minimum Safe Altitudes: General.***
***14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.***

**OLD**

**7–8–6. EXCEPTIONS**

**a.** VFR helicopters need not be separated from IFR helicopters. Traffic information and safety alerts must be issued as appropriate.

**NEW**

**7–8–6. EXCEPTIONS**

**a.** VFR helicopters **and powered-lift aircraft** need not be separated from IFR helicopters **or powered-lift aircraft**. Traffic information and safety alerts must be issued as appropriate.

**OLD**

**7–9–4. SEPARATION**

**Title** through **a**

**b.** VFR aircraft must be separated from VFR/IFR aircraft/ helicopter/rotorcraft that weigh more than 19,000 pounds and turbojets by no less than:

**b1** through **b3** ***NOTE***

**c.** For the application of Class Bravo airspace separation requirements, the V–22 Osprey must be treated as a helicopter/rotorcraft.

**d** through **d3** ***REFERENCE***

**NEW**

**7–9–4. SEPARATION**

No Change

**b.** VFR aircraft must be separated from VFR/IFR aircraft that weigh more than 19,000 pounds and turbojets by no less than:

No Change

Delete

Re–letter **c** through **c3** ***REFERENCE***

**OLD**

**7–9–6. HELICOPTER TRAFFIC**

VFR helicopters need not be separated from VFR or IFR helicopters. Traffic advisories and safety alerts must be issued as appropriate.

**NEW**

**7–9–6. HELICOPTER/POWERED-LIFT TRAFFIC**

VFR helicopters **and powered-lift aircraft** need not be separated from VFR or IFR helicopters **or powered-lift aircraft**. Traffic advisories and safety alerts must be issued as appropriate.

**OLD**

**7–9–7. ALTITUDE ASSIGNMENTS**

**Title** through **a**

**b.** Issue altitude assignments, if required, consistent with the provisions of 14 CFR section 91.119.

***NOTE–***
*The MSAs are:*

**1.** *Over congested areas, an altitude at least 1,000 feet above the highest obstacle,*

**2.** *Over other than congested areas, an altitude at least 500 feet above the surface.*

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–2, Flight Direction.*
*FAA Order JO 7110.65, Para 4–5–3, Exceptions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*

**NEW**

**7–9–7. ALTITUDE ASSIGNMENTS**

No Change

No Change

Delete

***REFERENCE–***
*FAA Order JO 7110.65, Para 4–5–2, Flight Direction.*
*FAA Order JO 7110.65, Para 4–5–3, Exceptions.*
*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*
***14 CFR Section 91.119, Minimum Safe Altitudes: General.***
***14 CFR Part 194, Special Federal Aviation Regulation (SFAR) No. 120–Powered-Lift Subpart C, 194.302 Provisions Under Part 91 Applicable to Powered-Lift.***

**1. PARAGRAPH NUMBER AND TITLE:**
3–10–5. LANDING CLEARANCE
5–14–9. APPROACH RUNWAY VERIFICATION (ARV)

**2. BACKGROUND:** In September 2023, the White House announced an investment into Approach Runway Verification (ARV) to prevent Wrong Surface Landings (WSLs). ARV is a new feature introduced in the Standard Terminal Automation Replacement System (STARS) S6.R10 software build, which has the capability to provide controllers with audible and visual alerts when aircraft align with a wrong runway, wrong airport, taxiway, or closed runway. As WSLs are currently among the Air Traffic Organization's Top 5 Safety Risks, the FAA is incorporating procedures within FAA Order JO 7110.65, Air Traffic Control, related to this STARS alerting feature to reinforce our safety mission.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **3–10–5. LANDING CLEARANCE** | **3–10–5. LANDING CLEARANCE** |
| **Title** through **d1** ***EXAMPLE*** | No Change |
| **2.** If time permits, verify the pilot is aligned with the correct runway. Issue control instructions/clearances as necessary. | No Change |
| ***EXAMPLE–***<br>*"Twin Cessna four one four lima bravo, verify you are aligned with Runway 27 Left."* | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 3–6–4, Safety Logic Alert Responses.*<br>*FAA Order JO 7110.65, Para 3–10–8, Withholding Landing Clearance.* | ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 3–6–4, Safety Logic Alert Responses.*<br>*FAA Order JO 7110.65, Para 3–10–8, Withholding Landing Clearance.*<br>***FAA Order JO 7110.65, Para 5–14–9, Approach Runway Verification (ARV).*** |

| OLD | NEW |
|---|---|
| Add | **5–14–9. APPROACH RUNWAY VERIFICATION (ARV)** |
| Add | **a. When an ARV alert is received, evaluate the reason for the alert and take appropriate action as needed.** |
| Add | **b. If another controller is involved in the alert initiate coordination as needed or as specified in a facility directive.** |
| Add | **c. Acknowledgment of an ARV alert signifies that appropriate action has or will be taken.** |
| Add | **d. ARV alerts may not be suppressed for another control position without being coordinated or as specified in a facility directive.** |

**1. PARAGRAPH NUMBER AND TITLE:** 4–5–7. ALTITUDE INFORMATION

**2. BACKGROUND:** When aircraft navigating on climb or descend via clearances are vectored, deviate due to weather, or are intentionally shortcut direct to a downstream fix, they must be considered off the procedure while navigating to the new fix. When an aircraft is off a procedure, any previously issued climb or descend via clearance no longer applies. If the controller wants the aircraft to resume climbing or descending via, the clearance must be restated.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4–5–7. ALTITUDE INFORMATION** | **4–5–7. ALTITUDE INFORMATION** |
| **Title** through **h2** | No Change |
| **3.** When cleared direct to a waypoint/fix without a published altitude, assign a crossing altitude. | No Change |
| ***PHRASEOLOGY–*** | ***PHRASEOLOGY–*** |
| *DESCEND VIA (STAR name and number).* | *DESCEND VIA (STAR name and number).* |
| *DESCEND VIA (STAR name and number and runway transition number).* | *DESCEND VIA (STAR name and number**), (**runway transition number) **(or landing direction)**.* |
| *DESCEND VIA (STAR name and number and runway number).* | *DESCEND VIA (STAR name and number**), (**runway number).* |
| *CLIMB VIA (SID name and number).* | *CLIMB VIA (SID name and number).* |
| *PROCEED DIRECT (fix/waypoint), CROSS (waypoint/fix) at (altitude) THEN DESCEND VIA (STAR name and number).* | ***CLIMB VIA (SID name and number), (en route transition).*** |
| | *PROCEED DIRECT (fix/waypoint), CROSS (waypoint/fix) at (altitude) THEN DESCEND VIA (STAR name and number).* |
| ***EXAMPLE–*** | ***EXAMPLE–*** |
| *"Descend via the Eagul Five arrival."* | *"Descend via Eagul **Six** arrival."* |
| *"Descend via the Wynde Eight Arrival, Runway 28 right transition."* | *"Descend via the Wynde Eight Arrival, Runway 28 right transition."* |
| *"Descend via the Lendy One Arrival, Runway 22 left."* | *"Descend via the Lendy One Arrival, Runway 22 left."* |
| *"Climb Via the Dawgs Four Departure."* | *"Climb Via **Ddany Three** departure."* |
| *"Proceed direct Denis, cross Denis at or above flight level two zero zero, then descend via the Mmell One arrival."* | *"Proceed direct Denis, cross Denis at or above flight level two zero zero, then descend via the Mmell One arrival."* |
| | ***"Climb Via Niitz Three departure, Sskee transition."*** |
| | ***"Descend via Chsly Five Arrival, landing south."*** |
| ***NOTE–*** | ***NOTE–*** |
| *Pilots must comply with all published speed restrictions on SIDs/STARs, independent of a climb via or descend via clearance.* | *Pilots must comply with all published speed restrictions on SIDs/STARs, independent of a climb via or descend via clearance.* |
| *Clearance to "descent via" authorizes pilots:* | *Clearance to "**descend** via" authorizes pilots:* |

| | |
|---|---|
| Add | ***1. To begin descent to the first published altitude on the procedure prior to the aircraft reaching the beginning of the STAR.*** |
| ***1.*** *To descend at pilot discretion to meet published restrictions on a STAR. Pilots navigating on a STAR must maintain the last assigned altitude until receiving clearance to descend via. Once leaving an altitude, the pilot may not return to that altitude without an ATC clearance.* | ***2.*** *To descend at pilot discretion to meet published restrictions on a STAR. Pilots navigating on a STAR must maintain the last assigned altitude until receiving clearance to descend via. Once leaving an altitude, the pilot may not return to that altitude without an ATC clearance.* |
| ***2.*** *When cleared direct to a waypoint, to descend at pilot discretion to meet restrictions on the procedure. ATC assumes obstacle clearance responsibility for aircraft not yet established or taken off of a procedure.* | ***3.*** *When cleared direct to a waypoint, to descend at pilot discretion to meet restrictions on the procedure. ATC assumes obstacle clearance responsibility for aircraft not yet established or taken off of a procedure.* |
| ***3.*** *To adjust speeds prior to reaching waypoints with published speed restrictions.* | ***4.*** *To adjust speeds prior to reaching waypoints with published speed restrictions.* |
| ***NOTE–***<br>*When cleared for SIDs that contain published speed restrictions, the pilot must comply with those speed restrictions independent of any "climb via" clearance. Clearance to "climb via" authorizes pilots:*<br>**1.** *When used in the IFR departure clearance, in a PDC, DCL or when subsequently cleared after departure to a waypoint depicted on a SID, to join a procedure after departure or resume a procedure.*<br>**2.** *When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot's discretion to the altitude depicted for the next waypoint. ATC must ensure obstacle clearance until the aircraft is established on the lateral and vertical path of the SID.*<br>**3.** *Once established on the depicted departure, to climb and to meet all published or assigned altitude and speed restrictions.* | No Change |
| ***REFERENCE–***<br>*FAA Order JO 7110.65, Para 4–4–2, Route Structure Transitions.*<br>*FAA Order JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.*<br>*FAA Order JO 7110.65, Para 5–5–9, Separation From Obstructions.*<br>*P/CG – Climb Via, Descend Via.* | No Change |
| ***NOTE–***<br>*Pilots cleared for vertical navigation using the phraseology "descend via" or "climb via" must inform ATC, upon initial contact, of the altitude leaving, the runway transition or landing direction if assigned (STARs), and any assigned restrictions not published on the procedure.* | No Change |

***EXAMPLE–***
*"Delta One Twenty One leaving flight level one niner zero, descending via the Eagul Five arrival runway two-six transition."*

*"Delta One Twenty One leaving flight level one niner zero for one two thousand, descending via the Eagul Five arrival, runway two-six transition."*

*"JetBlue six zero two leaving flight level two one zero descending via the Ivane Two arrival landing south."*

*"Cactus Seven Eleven leaving two thousand climbing via the Laura Two departure."*

*"Cactus Seven Eleven leaving two thousand for one-six thousand, climbing via the Laura Two departure."*

No Change

***REFERENCE–***
*AIM, Para 5–2–8, Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID).*
*P/CG – Top Altitude, Bottom Altitude.*
*AIM, Para 5–4–1, Standard Terminal Arrival (STAR) Procedures.*

No Change

***INTERPRETATION–***
*7110.65, 4–5–7, Altitude Information (12–1–2015)*

No Change

Add

**4. After a "climb via" or "descend via" clearance has been issued, if the aircraft is cleared direct to a waypoint/fix, the "climb via" or "descend via" clearance must be restated. The name of the SID or STAR does not need to be restated.**

Add

***PHRASEOLOGY–***
***CLEARED/PROCEED DIRECT (waypoint/fix), THEN CLIMB VIA SID.***

Add

**5. When vectoring or approving an aircraft to deviate, state an altitude to maintain and advise the pilot if you intend on clearing the aircraft to resume the "climb via" or "descend via" procedure.**

Add

***NOTE–***
***Once an aircraft is established on a SID or STAR and is climbing or descending via, if the aircraft is cleared direct to a downstream fix, or cleared to deviate, the aircraft is considered to be off the procedure.***

Add

***PHRASEOLOGY–***
***DEVIATION (restrictions as necessary) APPROVED, MAINTAIN (altitude), EXPECT TO RESUME STAR/SID AT (waypoint/fix).***

***CLEARED/PROCEED DIRECT (waypoint/fix), CROSS (waypoint/fix) (altitude), THEN CLIMB VIA SID.***

| | |
|---|---|
| Add | ***EXAMPLE–***<br>***"Deviation right of course approved, maintain one four thousand, expect to resume STAR at Glaxi."***<br><br>***"Proceed direct Mkgee, cross Mkgee at or above six thousand, then Climb Via SID."*** |
| **h4** through **h9** ***REFERENCE*** | Renumber **h6** through **h11** ***REFERENCE*** |

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**1. PARAGRAPH NUMBER AND TITLE:** 4–8–6. CIRCLING APPROACH

**2. BACKGROUND:** The Flight Standards Service (AFS) is changing the content in the Aeronautical Information Manual (AIM) and Aeronautical Information Publication (AIP) concerning circling minimums. AFS is primarily addressing circling at non-towered airports, however, they are also adding clarifying language at towered airfields for pilots to follow ATC instructions during a circling maneuver to the extent it does not contradict any published circling area restriction noted on the approach chart. The FAA is amending FAA Order JO 7110.65 in alignment with AIM/AIP language so that controllers do not place pilots in violation of the Terminal Instrument Procedures (TERPS) evaluated airspace.

**3. CHANGE:**

| OLD | NEW |
|---|---|
| **4–8–6. CIRCLING APPROACH** | **4–8–6. CIRCLING APPROACH** |
| **Title** through **a** | No Change |
| **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. | No Change |
| ***PHRASEOLOGY–***<br>*CIRCLE TO RUNWAY (number),*<br><br>*or*<br><br>*CIRCLE (direction using eight cardinal compass points) OF THE AIRPORT/RUNWAY FOR A LEFT/ RIGHT BASE/DOWNWIND TO RUNWAY (number).* | No Change |
| ***NOTE–***<br>*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.* | ***NOTE–***<br>*Where instrument approach procedures (IAPs) 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**, an** IAP may otherwise restrict circling approach maneuvers**, and pilots cannot accept instructions that contradict published circling area restrictions**.* |

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