CHANGE

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

JO 7110.65W
CHG 2

Effective Date:
11/10/16

SUBJ: Air Traffic Control

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

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

3. Where Can I Find This Change? This change is available on the FAA Web site at http://faa.gov/air_traffic/publications and https://employees.faa.gov/tools_resources/orders_notices/.

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

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

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 Retain this transmittal until superseded by a new basic order.

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

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Date: 09/13/2016

Distribution: ZAT-710, ZAT-464

Initiated By: AJV-0
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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
2–3–3. OCEANIC DATA ENTRIES
8–7–3. LONGITUDINAL SEPARATION
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8–8–3. LONGITUDINAL SEPARATION
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8–10–3. LONGITUDINAL SEPARATION
8–10–4. LATERAL SEPARATION
13–2–1. DESCRIPTION
13–2–5. COORDINATION

This change replaces "OCEAN21" with the term "Advanced Technologies and Oceanic Procedures (ATOP)."

b. 1–2–6. ABBREVIATIONS
4–8–1. APPROACH CLEARANCE
5–10–1. APPLICATION

This change adds the term "Enhanced Flight Vision System (EFVS)" to the order.

c. 1–2–6. ABBREVIATIONS
8–7–4. LATERAL SEPARATION
8–8–4. LATERAL SEPARATION

This change adds the term "North Atlantic High Level Airspace (NAT HLA)" to the order.

d. 2–1–1. ATC SERVICE

This change restructures the paragraph to add clarity.

e. 1–2–6. ABBREVIATIONS
2–1–17. RADIO COMMUNICATIONS

This change adds the term "Voice Communications Indicator (VCI)" and adds guidance for the use of VCI.

f. 2–1–28. RVSM OPERATIONS

This change directs controllers to modify an aircraft's RVSM capability by amending the equipment string of the ICAO flight plan (Field 10) thereby eliminating flight plan processing errors caused by directly amending the aircraft equipment suffix.

g. 2–6–3. PIREP INFORMATION

This change removes Flight Service from the handling of PIREPs with an exception to Alaska Flight Service Stations.

h. 2–9–3. CONTENT

This change aligns the paragraph content with the ATIS information in the AIM and AIP.

i. 3–1–5. VEHICLES/EQUIPMENT/PERSONNEL ON RUNWAYS

This change provides a more accurate paragraph title that captures movement operations near runways and reorganizes the paragraph and phraseology for clarity.

j. 3–1–6. TRAFFIC INFORMATION
3–8–1. SEQUENCING/SPACING INFORMATION
3–10–3. SAME RUNWAY SEPARATION

This change incorporates optional phraseology allowing use of the term "parallel runway" when issuing traffic during parallel operations. It also provides consistency of phraseology.

k. 3–7–1. GROUND TRAFFIC MOVEMENT

This change removes "proceed as requested" as an option when authorizing vehicles, equipment, or personnel to cross or operate on a runway. This does not preclude the use of "proceed as requested" in other situations not involving runway access.

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

This change: (a) clarifies the point at which it is safe to issue a runway crossing clearance (vehicle or aircraft) before, during, and after aircraft arrivals or departures; (b) amends the phraseology required when issuing crossing clearances to ground traffic; and (c) updates multiple runway crossing require-

ment taxi distance from less than 1,000 feet to 1,300 feet or less.

m. 3–7–5. PRECISION APPROACH CRITICAL AREA

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

4–6–8. ILS PROTECTION/CRITICAL AREAS

This change adds a *NOTE* to emphasize the requirements with references as what to do when PIREPs of lower ceilings or visibility values are received. It also changes the term “reported” to “official weather” utilizing the same terminology in related paragraphs.

n. 3–8–3. SIMULTANEOUS SAME DIRECTION OPERATIONS

This change clarifies the specific aircraft category for simultaneous operation. The distance requirement for 700 feet between runway centerlines when conducting SSDO involving a heavy aircraft remains in place in order to accommodate their higher ADG designation and corresponding characteristics. A *NOTE* has been added to articulate the applicable wake turbulence provisions are to be adhered to when SSDO is conducted. This change cancels and incorporates N JO 7110.709, Simultaneous Same Direction Operations, effective 03/31/2016.

o. 3–9–4. LINE UP AND WAIT (LUAW)

This change adds a phraseology example which allows controllers instruction to be clearer with their instructions when controlling aircraft in the traffic pattern while utilizing LUAW procedures. These additional examples will reduce pilot confusion. This change also removes references to Air Traffic Operations, Terminal Safety and Operations Support ; Director, Terminal Operations (service area), and Director, Terminal Safety and Operations Support. It replaces Terminal Services Director of Operations with Service Area Director of Air Traffic Operations throughout the order. This change also emulates the USAF/USN standards and require controllers to issue traffic to aircraft within 6–flying miles of the same runway during Line Up and Wait operations.

p. 3–9–6. SAME RUNWAY SEPARATION

3–9–7. WAKE TURBULENCE SEPARATION INTERSECTION DEPARTURES

5–5–4. MINIMA

This change adds a time–based wake turbulence separation for a small aircraft crossing behind a B757 that has departed a parallel runway separated by less than 2,500 feet. Also, a *NOTE* is amended to delete the requirement to issue a heading with the takeoff clearance.

q. 4–3–2. DEPARTURE CLEARANCES

This change adds content that requires the controller assigning departure instructions to a pilot from a towered airport to issue this information consistent with published DPs or DVAs. This change also removes the word “azimuth” as it is not defined and is obsolete as applied to departures. This change also replaces the words “these items” with more precise content.

r. 4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES

This change provides controllers the option of using clearance void and release times based on a time interval in whole minutes, without any reference to the UTC clock. This phraseology option currently exists in Paragraph 4–5–7b, Altitude Information.

s. 4–8–1. APPROACH CLEARANCE

This change clarifies the usage of assigned altitudes below the TAA and adds the phraseology “Cancel Approach Clearance ” to the paragraph.

t. 5–6–3. VECTORS BELOW MINIMUM ALTITUDE

This change reorganizes the paragraph structure to show the application of the provisions as intended, and it removes the word “terminal” in order to afford both the terminal and enroute domains the benefits of a DVA and to retain consistency with the intent of the DVA criteria as developed by AFS. This changes also clarifies that aircraft may be vectored within the DVA described in facility directives.

u. 5–7–1. APPLICATION

This change allows the use of speed assignments in 5 knot increments.

v. 5–7–3. MINIMA

This change adds language to emphasize the 200 knot speed limitation (IAW 14 CFR Part 91.117) for aircraft operating below Class B airspace or in a VFR corridor designated through Class B airspace. Additionally, the paragraph title was changed and sections were reworded for clarity.

w. 5–9–6. SIMULTANEOUS DEPENDENT APPROACH

This change introduces the use of 1.5 mile radar separation diagonally on simultaneous dependent approaches when runway centerlines are separated by more than 3,600 feet but no more than 8,300 feet. There are no additional conditions or procedures required when utilizing the 1.5 NM minimum separation standard.

x. 5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE

This change aligns the requirements to utilize FMA when PRM approaches are being conducted.

y. 7–2–1. VISUAL SEPARATION

This change clarifies the intent of the paragraph and adds a *NOTE* and *EXAMPLE* for further clarification.

z. 7–8–2. CLASS C SERVICES

This change accounts for current capabilities and requires facilities to utilize available radar resources to the extent that coverage is sufficient to provide those radar services.

aa. 8–7–3. LONGITUDINAL SEPARATION
8–8–3. LONGITUDINAL SEPARATION
8–9–3. LONGITUDINAL SEPARATION
8–10–3. LONGITUDINAL SEPARATION

This change implements ADS–C CDP which allows climb and descend of appropriately equipped aircraft using reduced separation in the oceanic domain.

ab. Editorial Changes

Editorial changes to: Paragraphs 5–5–4, 5–7–2, 6–3–1, 7–6–4, 7–7–3, 7–8–3, and 10–2–19.

ac. 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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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–
FAAO 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 manual, the following abbreviations have the meanings indicated. (See TBL 1–2–1.)

TBL 1–2–1
FAA Order JO 7110.65 Abbreviations

Abbreviation	Meaning
AAR	Airport acceptance rate
AC	Advisory Circular
ACC	Area Control Center
ACD	ARTS Color Display
ACE–IDS . . .	ASOS Controller Equipment– Information Display System
ACL	Aircraft list
ACLS	Automatic Carrier Landing System
ADC	Aerospace Defense Command
ADIZ	Air Defense Identification Zone (to be pronounced "AY DIZ")
ADS	Automatic Dependent Surveillance
ADS–B	Automatic Dependent Surveillance Broadcast
ADS–C	Automatic Dependent Surveillance Contract
AERT	Automation Embedded Route Text
AFP	Airspace Flow Program
AIDC	ATS Interfacility Data Communications
AIM	Aeronautical Information Manual
AIRMET . . .	Airmen's meteorological information
ALERFA . . .	Alert phase code (Alerting Service)
ALNOT	Alert notice
ALS	Approach Light System
ALTRV	Altitude reservation
AMASS	Airport Movement Area Safety System

Abbreviation	Meaning
AMB	Ambiguity–A disparity greater than 2 miles exists between the position declared for a target by ATTS and another facility's computer declared position during interfacility handoff
AMVER	Automated Mutual Assistance Vessel Rescue System
ANG	Air National Guard
APR	ATC preferred route
APREQ	Approval Request
ARINC	Aeronautical Radio Incorporated
ARIP	Air refueling initial point
ARSR	Air route surveillance radar
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Terminal System
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
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
BAASS	Bigelow Aerospace Advanced Space Studies
BASE	Cloud base
CA	Conflict Alert
CARCAH . . .	Chief, Aerial Reconnaissance Coordination, All Hurricanes
CARF	Central Altitude Reservation Function
CARTS	Common ARTS
CAT	Clear air turbulence
CDT	Controlled departure time
CENRAP . . .	Center Radar ARTS Presentation
CEP	Central East Pacific

Abbreviation	Meaning
CERAP	Combined Center/RAPCON
CFR	Code of Federal Regulations
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
DETRESFA .	Distress Phase code (Alerting Service)
DH	Decision height
DL	Departure List
DME	Distance measuring equipment compatible with TACAN
DOE	Department of Energy
DP	Instrument Departure Procedure
DR	Dead reckoning
DRT	Diversion recovery tool
DSR	Display System Replacement
DTAS	Digital Terminal Automation Systems
DTM	Digital Terrain Map
DVFR	Defense Visual Flight Rules
DVRSN	Diversion
EA	Electronic Attack
EAS	En Route Automation System
EBUS	Enhanced Backup Surveillance 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
EOS	End Service
EOVM	Emergency obstruction video map
ERAM	En Route Automation Modernization
ERIDS	En Route Information Display System
ETA	Estimated time of arrival
FAA	Federal Aviation Administration
FAAO	FAA Order

Abbreviation	Meaning
FANS	Future Air Navigation System
FDB	Full Data Block
FDIO	Flight Data Input/Output
FDP	Flight data processing
FIR	Flight Information Region
FL	Flight level
FLIP	Flight Information Publication
FLM	Front–Line Manager
FLY	Fly or flying
FMS	Flight Management System
FMSP	Flight Management System Procedure
FSM	Flight Schedule Monitor
FSS	Flight Service Station
GCA	Ground controlled approach
GNSS	Global Navigation Satellite System
GPD	Graphics Plan Display
GPS	Global Positioning System
GS	Ground stop
HAR	High Altitude Redesign
HF/RO	High Frequency/Radio Operator
HIRL	High intensity runway lights
IAFDOF	Inappropriate Altitude for Direction of Flight
ICAO	International Civil Aviation Organization
IDENT	Aircraft identification
IDS	Information Display System
IFR	Instrument flight rules
IFSS	International Flight Service Station
ILS	Instrument Landing System
INCERFA . . .	Uncertainty Phase code (Alerting Service)
INREQ	Information request
INS	Inertial Navigation System
IR	IFR military training route
IRU	Inertial Reference Unit
ISR	Increased Separation Required
ITWS	Integrated Terminal Weather System
JATO	Jet assisted takeoff
LAHSO	Land and Hold Short Operations
LOA	Letter of Agreement
LLWAS	Low Level Wind Shear Alert System
LLWAS NE .	Low Level Wind Shear Alert System Network Expansion
LLWAS–RS .	Low Level Wind Shear Alert System Relocation/Sustainment

Abbreviation	Meaning
LLWS	Low Level Wind Shear
L/MF	Low/medium frequency
LORAN	Long Range Navigation System
Mach	Mach number
MALS	Medium Intensity Approach Light System
MALSR	Medium Approach Light System with runway alignment indicator lights
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

Abbreviation	Meaning
NORAD	North American Aerospace Defense Command
NOS	National Ocean Service
NOTAM	Notice to Airmen
NOWGT	No weight. The weight class or wake category has not been determined
NRP	North American Route Program
NRR	Nonrestrictive Route
NRS	Navigation Reference System
NTZ	No transgression zone
NWS	National Weather Service
NWSOP	National Winter Storm Operations Plan
ODALS	Omnidirectional Approach Lighting System
ODP	Obstacle Departure Procedure
OID	Operator Interface Device
OS	Operations Supervisor
OTR	Oceanic transition route
PAPI	Precision Approach Path Indicators
PAR	Precision approach radar
PAR	Preferred arrival route
PBCT	Proposed boundary crossing time
P/CG	Pilot/Controller Glossary
PDAR	Preferential departure arrival route
PDC	Pre–Departure Clearance
PDR	Preferential departure route
PPI	Plan position indicator
PTP	Point–to–point
PVD	Plan view display
RA	Radar Associate
RAIL	Runway alignment indicator lights
RAPCON . . .	Radar Approach Control Facility (USAF)
RATCF	Radar Air Traffic Control Facility (USN)
RBS	Radar bomb scoring
RCC	Rescue Coordination Center
RCLS	Runway Centerline System
RCR	Runway condition reading
RE	Recent (used to qualify weather phenomena such as rain, e.g. recent rain = RERA)
REIL	Runway end identifier lights
RNAV	Area navigation
RNP	Required Navigation Performance
RTQC	Real–Time Quality Control
RVR	Runway visual range
RVSM	Reduced Vertical Separation Minimum
RVV	Runway visibility value
SAA	Special Activity Airspace
SAR	Search and rescue
SATCOM . . .	Satellite Communication
SDP	Surveillance Data Processing
SELCAL	Selective Calling System
SFA	Single frequency approach
SFO	Simulated flameout
SID	Standard Instrument Departure
SIGMET	Significant meteorological information
SPA	Special Posting Area
SPECI	Nonroutine (Special) Aviation Weather Report
STAR	Standard terminal arrival
STARS	Standard Terminal Automation Replacement System
STMC	Supervisory Traffic Management Coordinator
STMCIC	Supervisory Traffic Management Coordinator–in–charge
STOL	Short takeoff and landing
SURPIC	Surface Picture
SVFR	Special Visual Flight Rules
TAA	Terminal arrival area
TAS	Terminal Automation Systems
TACAN	TACAN UHF navigational aid (omnidirectional course and distance information)
TAWS	Terrain Awareness Warning System
TCAS	Traffic Alert and Collision Avoidance System
TCDD	Tower cab digital display
TDLS	Terminal Data Link System
TDW	Tower display workstation
TDWR	Terminal Doppler Weather Radar
TDZL	Touchdown Zone Light System
TFMS	Traffic Flow Management System
TMC	Traffic Management Coordinator
TMU	Traffic Management Unit
TRACON . . .	Terminal Radar Approach Control
TRSA	Terminal radar service area

Abbreviation	Meaning
UFO	Unidentified flying object
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
WARP	Weather and Radar Processing
WATRS	West Atlantic Route System
WSO	Weather Service Office
WSP	Weather System Processor
WST	Convective SIGMET

Chapter 2. General Control

Section 1. General

2–1–1. ATC SERVICE

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

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

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

2. Supports National Security and Homeland Defense missions.

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

1. Volume of traffic.

2. Frequency congestion.

3. Quality of surveillance.

4. Controller workload.

5. Higher priority duties.

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

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

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

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

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

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

REFERENCE–
FAAO JO 7110.65, Para 1–1–9 Procedural Letters of Agreement.

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

REFERENCE–
FAAO JO 7110.65, Para 2–1–6 Safety Alert.
FAAO JO 7110.65, Chapter 10 Emergencies.
FAAO JO 7110.65, Para 5–1–8 Merging Target Procedures.

e. Air Traffic Control services are not provided for model aircraft operating in the NAS.

NOTE–
This does not relieve model aircraft operators from the requirements of section 336 of Public Law 112–95 and 14 CFR Part 101 including the notification requirement.

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

REFERENCE–
P/CG Term – Model Aircraft.

2–1–2. DUTY PRIORITY

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

REFERENCE–
FAAO JO 7110.65, Para 2–1–6 Safety Alert.

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

b. Provide support to national security and homeland defense activities to include, but not be

limited to, reporting of suspicious and/or unusual aircraft/pilot activities.

REFERENCE–
FAAO JO 7610.4 Special Operations.

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

2–1–3. PROCEDURAL PREFERENCE

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

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

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

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

2–1–4. OPERATIONAL PRIORITY

Provide air traffic control service to aircraft on a "first come, first served" basis as circumstances permit, except the following:

NOTE–
It is solely the pilot's prerogative to cancel an IFR flight plan. However, a pilot's retention of an IFR flight plan does not afford priority over VFR aircraft. For example, this does not preclude the requirement for the pilot of an arriving IFR aircraft to adjust his/her flight path, as necessary, to enter a traffic pattern in sequence with arriving VFR aircraft.

a. An aircraft in distress has the right of way over all other air traffic.

REFERENCE–
14 CFR Section 91.113(c).

b. Provide priority to civilian air ambulance flights (call sign "MEDEVAC"). Use of the MEDEVAC call sign indicates that operational priority is requested. When verbally requested, provide priority to AIR EVAC, HOSP, and scheduled air carrier/air taxi flights. Assist the pilots of MEDEVAC, AIR EVAC, and HOSP aircraft to avoid areas of significant weather and turbulent conditions. When requested by a pilot, provide notifications to expedite ground handling of patients, vital organs, or urgently needed medical materials.

NOTE–
It is recognized that heavy traffic flow may affect the controller's ability to provide priority handling. However, without compromising safety, good judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.

c. Provide maximum assistance to SAR aircraft performing a SAR mission.

REFERENCE–
FAAO JO 7110.65, Para 10–1–3, Providing Assistance.

d. Expedite the movement of presidential aircraft and entourage and any rescue support aircraft as well as related control messages when traffic conditions and communications facilities permit.

NOTE–
As used herein the terms presidential aircraft and entourage include aircraft and entourage of the President, Vice President, or other public figures when designated by the White House.

REFERENCE–
FAAO JO 7110.65, Para 2–4–20 Aircraft Identification.
FAAO JO 7110.65, Para 4–3–2 Departure Clearances.
FAAO JO 7210.3, Para 5–1–1 Advance Coordination.

e. Provide special handling, as required to expedite Flight Check aircraft.

NOTE–
It is recognized that unexpected wind conditions, weather, or heavy traffic flows may affect controller's ability to provide priority or special handling at the specific time requested.

REFERENCE–
FAAO JO 7110.65, Para 9–1–3, Flight Check Aircraft.

f. Expedite movement of NIGHT WATCH aircraft when NAOC (pronounced NA–YOCK) is indicated in the remarks section of the flight plan or in air/ground communications.

NOTE–
The term "NAOC" will not be a part of the call sign but may be used when the aircraft is airborne to indicate a request for special handling.

REFERENCE–
FAAO JO 7610.4, Para 12–1–1 Applications.

g. Provide expeditious handling for any civil or military aircraft using the code name "FLYNET."

REFERENCE–
FAAO JO 7110.65, Para 9–2–6 FLYNET.
FAAO JO 7610.4, Para 12–4–1 "FLYNET" Flights, Nuclear Emergency Teams.

h. Provide expeditious handling of aircraft using the code name "Garden Plot" only when CARF notifies you that such priority is authorized. Refer any questions regarding flight procedures to CARF for resolution.

NOTE–
Garden Plot flights require priority movement and are coordinated by the military with CARF. State authority will contact the Regional Administrator to arrange for priority of National Guard troop movements within a particular state.

i. Provide special handling for USAF aircraft engaged in aerial sampling missions using the code name "SAMP."

REFERENCE–
FAAO JO 7110.65, Para 9–2–17, SAMP.
FAAO JO 7210.3, Para 5–3–4, Atmosphere Sampling For Nuclear Contamination.
FAAO JO 7610.4, Para 12–4–3, Atmospheric Sampling For Nuclear Contamination.

j. Provide maximum assistance to expedite the movement of interceptor aircraft on active air defense missions until the unknown aircraft is identified.

k. Expedite movement of Special Air Mission aircraft when SCOOT is indicated in the remarks section of the flight plan or in air/ground communications.

NOTE–
The term "SCOOT" will not be part of the call sign but may be used when the aircraft is airborne to indicate a request for special handling.

REFERENCE–
FAAO JO 7610.4, Para 12–7–1, Applications.

l. When requested, provide priority handling to TEAL and NOAA mission aircraft.

NOTE–
Priority handling may be requested by the pilot, or via telephone from CARCAH or the 53rd Weather Reconnaissance Squadron (53WRS) operations center personnel, or in the remarks section of the flight plan.

REFERENCE–
FAAO JO 7110.65, Para 9–2–19, Weather Reconnaissance Flights.

m. IFR aircraft must have priority over SVFR aircraft.

REFERENCE–
FAAO JO 7110.65, Chapter 7, Section 5, Special VFR (SVFR).

n. Providing priority and special handling to expedite the movement of OPEN SKIES Treaty observation and demonstration (F and D) flights.

NOTE–
An OPEN SKIES Treaty (F and D) aircraft has priority over all "regular" air traffic. "Regular" is defined as all aircraft traffic other than:

1. *Emergencies.*
2. *Aircraft directly involved in presidential movement.*
3. *Forces or activities in actual combat.*
4. *MEDEVAC, and active SAR missions.*
5. AIR EVAC and HOSP aircraft that have requested priority handling.

REFERENCE–
FAAO JO 7110.65, Para 9–2–22, OPEN SKIES Treaty Aircraft.
FAAO JO 7210.3, Para 5–3–7, OPEN SKIES Treaty Aircraft Priority Flight (F and D).
Treaty on OPEN SKIES, Treaty Document, 102–37.

o. Aircraft operating under the North American Route Program (NRP) and in airspace identified in the High Altitude Redesign (HAR) program, are not subject to route limiting restrictions (e.g., published preferred IFR routes, letter of agreement requirements, standard operating procedures).

REFERENCE–
FAAO JO 7110.65, Para 2–3–2, En Route Data Entries.
FAAO JO 7110.65, Para 2–2–15, North American Route Program (NRP) Information.
FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments.
FAAO JO 7210.3, Chapter 17, Section 16, North American Route Program.

p. If able, provide priority handling to diverted flights. Priority handling may be requested via use of "DVRSN" in the remarks section of the flight plan or by the flight being placed on the Diversion Recovery Tool (DRT).

REFERENCE–
FAAO JO 7210.3, Para 17–4–5, Diversion Recovery.

2–1–5. EXPEDITIOUS COMPLIANCE

a. Use the word "immediately" only when expeditious compliance is required to avoid an imminent situation.

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

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

2–1–6. SAFETY ALERT

Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude that, in your judgment,

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

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

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

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

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

PHRASEOLOGY–
LOW ALTITUDE ALERT (call sign),

CHECK YOUR ALTITUDE IMMEDIATELY.

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

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

REFERENCE–
P/CG Term – Final Approach – IFR

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

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

and/or

CLIMB/DESCEND (specific altitude if appropriate) IMMEDIATELY.

EXAMPLE–
"Traffic Alert, Cessna Three Four Juliet, 12'o clock, 1 mile advise you turn left immediately."
or
"Traffic Alert, Cessna Three-Four Juliet, 12'o clock, 1 mile advise you turn left and climb immediately."

REFERENCE–
FAAO JO 7110.65, Para 5–14–1, Conflict Alert (CA) and Mode C Intruder (MCI) Alert.
FAAO JO 7110.65, Para 5–14–2, En Route Minimum Safe Altitude Warning (E–MSAW).
FAAO JO 7110.65, Para 5–15–6, CA/MCI.
FAAO JO 7110.65, Para 5–2–23, Altitude Filters.
FAAO JO 7110.65, Para 2-1-21, Traffic Advisories

2–1–7. INFLIGHT EQUIPMENT MALFUNCTIONS

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

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

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

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

2–1–8. MINIMUM FUEL

If an aircraft declares a state of "minimum fuel," inform any facility to whom control jurisdiction is transferred of the minimum fuel problem and be alert

for any occurrence which might delay the aircraft en route.

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

2–1–9. REPORTING ESSENTIAL FLIGHT INFORMATION

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

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

REFERENCE–
FAAO JO 7110.65, Para 3–3–3, Timely Information.
FAAO JO 7110.65, Para 5–1–6, Service Limitations.
FAAO JO 7210.3, Para 3–1–2, Periodic Maintenance.
USN, See OPNAVINST 3721.30.

2–1–10. NAVAID MALFUNCTIONS

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

1. Request a report from a second aircraft.

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

3. If the second aircraft confirms the malfunction or in the absence of a second aircraft report, activate the standby equipment or request the monitor facility to activate.

4. If normal operation is reported after the standby equipment is activated, continue use, record the incident on FAA Form 7230–4 or appropriate military form, and notify technical operations personnel (the Systems Engineer of the ARTCC when an en route aid is involved).

5. If continued malfunction is reported after the standby equipment is activated or the standby equipment cannot be activated, inform technical operations personnel and request advice on whether or not the aid should be shut down. In the absence of a second aircraft report, advise the technical operations personnel of the time of the initial aircraft report and the estimated time a second aircraft report could be obtained.

b. When an aircraft reports a GPS or WAAS anomaly, request the following information and/or take the following actions:

1. Record the following minimum information:

(a) Aircraft make, model, and call sign.

(b) Location or position, and altitude at the time where GPS or WAAS anomaly was observed.

(c) Date/time of occurrence.

2. Request a report from a second aircraft.

3. Record the incident on FAA Form 7230–4 or appropriate military form.

4. Inform other aircraft of the anomaly as specified in paragraph 4-8-1j or k, as applicable.

PHRASEOLOGY–
ATTENTION ALL AIRCRAFT, GPS REPORTED UNRELIABLE (OR WAAS UNAVAILABLE) IN VICINITY/AREA (position).

EXAMPLE–
"Attention all aircraft, GPS reported unreliable (or WAAS unavailable) in the area 30 miles south of Waco VOR."

c. When a pilot reports a WAAS anomaly, determine from the pilot what indications he or she observes and record the information in accordance with sub-paragraph b above.

2–1–11. USE OF MARSA

a. MARSA may only be applied to military operations specified in a letter of agreement or other appropriate FAA or military document.

NOTE–
Application of MARSA is a military command prerogative. It will not be invoked indiscriminately by individual units or pilots. It will be used only for IFR operations requiring its use. Commands authorizing MARSA will ensure that its implementation and terms of use are documented and

coordinated with the control agency having jurisdiction over the area in which the operations are conducted. Terms of use will assign responsibility and provide for separation among participating aircraft.

b. ATC facilities do not invoke or deny MARSA. Their sole responsibility concerning the use of MARSA is to provide separation between military aircraft engaged in MARSA operations and other nonparticipating IFR aircraft.

c. DOD must ensure that military pilots requesting special-use airspace/ATCAAs have coordinated with the scheduling agency, have obtained approval for entry, and are familiar with the appropriate MARSA procedures. ATC is not responsible for determining which military aircraft are authorized to enter special-use airspace/ATCAAs.

REFERENCE–
FAAO JO 7110.65, Para 9–2–13, Military Aerial Refueling.

2–1–12. MILITARY PROCEDURES

Military procedures in the form of additions, modifications, and exceptions to the basic FAA procedure are prescribed herein when a common procedure has not been attained or to fulfill a specific requirement. They must be applied by:

a. ATC facilities operated by that military service.

EXAMPLE–
1. *An Air Force facility providing service for an Air Force base would apply USAF procedures to all traffic regardless of class.*

2. *A Navy facility providing service for a Naval Air Station would apply USN procedures to all traffic regardless of class.*

b. ATC facilities, regardless of their parent organization (FAA, USAF, USN, USA), supporting a designated military airport exclusively. This designation determines which military procedures are to be applied.

EXAMPLE–
1. *An FAA facility supports a USAF base exclusively; USAF procedures are applied to all traffic at that base.*

2. *An FAA facility provides approach control service for a Naval Air Station as well as supporting a civil airport; basic FAA procedures are applied at both locations by the FAA facility.*

3. *A USAF facility supports a USAF base and provides approach control service to a satellite civilian airport; USAF procedures are applied at both locations by the USAF facility.*

REFERENCE–
FAAO JO 7110.65, Para 1–2–5, Annotations.

c. Other ATC facilities when specified in a letter of agreement.

EXAMPLE–
A USAF unit is using a civil airport supported by an FAA facility– USAF procedures will be applied as specified in a letter of agreement between the unit and the FAA facility to the aircraft of the USAF unit. Basic FAA procedures will be applied to all other aircraft.

2–1–13. FORMATION FLIGHTS

a. Control formation flights as a single aircraft. When individual control is requested, issue advisory information which will assist the pilots in attaining separation. When pilot reports indicate separation has been established, issue control instructions as required.

NOTE–
1. *Separation responsibility between aircraft within the formation during transition to individual control rests with the pilots concerned until approved separation has been attained.*

2. *Formation join-up and breakaway will be conducted in VFR weather conditions unless prior authorization has been obtained from ATC or individual control has been approved.*

REFERENCE–
FAAO JO 7110.65, Para 5–5–8, Additional Separation for Formation Flights.
P/CG Term– Formation Flight.

b. Military and civil formation flights in RVSM airspace.

1. Utilize RVSM separation standards for a formation flight, which consists of all RVSM approved aircraft.

2. Utilize non–RVSM separation standards for a formation flight above FL 290, which does not consist of all RVSM approved aircraft.

3. If aircraft are requesting to form a formation flight to FL 290 or above, the controller who issues the clearance creating the formation flight is responsible for ensuring that the proper equipment suffix is entered for the lead aircraft.

4. If the flight departs as a formation, and is requesting FL 290 or above, the first center sector must ensure that the proper equipment suffix is entered.

5. If the formation flight is below FL 290 and later requests FL 290 or above, the controller receiving the RVSM altitude request must ensure the proper equipment suffix is entered.

6. Upon break–up of the formation flight, the controller initiating the break–up must ensure that all aircraft or flights are assigned their proper equipment suffix.

2–1–14. COORDINATE USE OF AIRSPACE

a. Ensure that the necessary coordination has been accomplished before you allow an aircraft under your control to enter another controller's area of jurisdiction.

b. Before you issue a control instruction directly to a pilot that will change the aircraft's heading, route, speed, or altitude, you must ensure that coordination has been completed with all controllers whose area of jurisdiction is affected by those instructions unless otherwise specified by a letter of agreement or facility directive. If your control instruction will be relayed to the pilot through a source other than another radar controller (FSS, ARINC, another pilot, etc.), you are still responsible to ensure that all required coordination is completed.

NOTE–
1. *It is good operating practice for controllers to confirm that required coordination has been/will be effected, especially in unusual circumstances, such as recently modified sector configurations, airspace changes, route changes, etc.*

2. *Ensuring that all required coordination has been completed does not necessarily imply that the controller issuing the control instruction directly to the pilot has to perform the coordination action.*

REFERENCE–
FAAO JO 7110.65, Para 2–1–15, Control Transfer.
FAAO JO 7110.65, Para 5–5–10, Adjacent Airspace.
FAAO JO 7110.65, Para 5–4–5, Transferring Controller Handoff.
FAAO JO 7110.65, Para 5–4–6, Receiving Controller Handoff.

2–1–15. CONTROL TRANSFER

a. Transfer control of an aircraft in accordance with the following conditions:

1. At a prescribed or coordinated location, time, fix, or altitude; or,

2. At the time a radar handoff and frequency change to the receiving controller have been completed and when authorized by a facility directive or letter of agreement which specifies the type and extent of control that is transferred.

REFERENCE–
FAAO JO 7110.65, Para 2–1–14, Coordinate Use of Airspace.
FAAO JO 7110.65, Para 5–4–5, Transferring Controller Handoff.
FAAO JO 7110.65, Para 5–4–6, Receiving Controller Handoff.

b. Transfer control of an aircraft only after eliminating any potential conflict with other aircraft for which you have separation responsibility.

c. Assume control of an aircraft only after it is in your area of jurisdiction unless specifically coordinated or as specified by letter of agreement or a facility directive.

2–1–16. SURFACE AREAS

a. Coordinate with the appropriate nonapproach control tower on an individual aircraft basis before issuing a clearance which would require flight within a surface area for which the tower has responsibility unless otherwise specified in a letter of agreement.

REFERENCE–
FAAO JO 7210.3, Para 4–3–1, Letters of Agreement.
14 CFR Section 91.127, Operating on or in the Vicinity of an Airport in Class E Airspace.
P/CG Term– Surface Area.

b. Coordinate with the appropriate control tower for transit authorization when you are providing radar traffic advisory service to an aircraft that will enter another facility's airspace.

NOTE–
The pilot is not expected to obtain his/her own authorization through each area when in contact with a radar facility.

c. Transfer communications to the appropriate facility, if required, prior to operation within a surface area for which the tower has responsibility.

REFERENCE–
FAAO JO 7110.65, Para 2–1–17, Radio Communications Transfer.
FAAO JO 7110.65, Para 3–1–11, Surface Area Restrictions.
FAAO JO 7110.65, Para 7–6–1, Application.
14 CFR Section 91.129, Operations in Class D Airspace.

2–1–17. RADIO COMMUNICATIONS

a. Transfer radio communications before an aircraft enters the receiving controller's area of jurisdiction unless otherwise coordinated or specified by a letter of agreement or a facility directive.

b. Transfer radio communications by specifying the following:

NOTE–
Radio communications transfer procedures may be specified by a letter of agreement or contained in the route description of an MTR as published in the DOD Planning AP/1B (AP/3).

1. The facility name or location name and terminal function to be contacted. *TERMINAL*: Omit the location name when transferring communications to another controller within your facility, or, when the tower and TRACON share the same name (for example, Phoenix Tower and Phoenix TRACON).

EXCEPTION. Controllers must include the name of the facility when instructing an aircraft to change frequency for final approach guidance.

2. Frequency to use except the following may be omitted:

(a) FSS frequency.

(b) Departure frequency if previously given or published on a SID chart for the procedure issued.

(c) *TERMINAL:*

(1) Ground or local control frequency if in your opinion the pilot knows which frequency is in use.

(2) The numbers preceding the decimal point if the ground control frequency is in the 121 MHz bandwidth.

EXAMPLE–
"Contact Tower."
"Contact Ground."
"Contact Ground Point Seven."
"Contact Ground, One Two Zero Point Eight."
"Contact Huntington Radio."
"Contact Departure."
"Contact Los Angeles Center, One Two Three Point Four."

3. Time, fix, altitude, or specifically when to contact a facility. You may omit this when compliance is expected upon receipt.

NOTE–
AIM, para 5–3–1, ARTCC Communications, informs pilots that they are expected to maintain a listening watch on the transferring controller's frequency until the time, fix, or altitude specified.

PHRASEOLOGY–
CONTACT (facility name or location name and terminal function), (frequency).

If required,

AT (time, fix, or altitude).

c. Controllers must, within a reasonable amount of time, take appropriate action to establish/restore communications with all aircraft for which a communications transfer or initial contact to his/her sector is expected/required.

NOTE–
For the purposes of this paragraph, a reasonable amount of time is considered to be 5 minutes from the time the aircraft enters the controller's area of jurisdiction or comes within range of radio/communications coverage. Communications include two–way VHF or UHF radio contact, data link, or high frequency (HF) radio through an approved third–party provider such as ARINC.

d. ERAM facilities, beginning with initial audio contact with an aircraft, must utilize the voice communication indicator to reflect the current status of voice communications.

e. In situations where an operational advantage will be gained, and following coordination with the receiving controller, you may instruct aircraft on the ground to monitor the receiving controller's frequency.

EXAMPLE–
"Monitor Tower."
"Monitor Ground."
"Monitor Ground Point Seven."
"Monitor Ground, One Two Zero Point Eight."

f. In situations where a sector has multiple frequencies or when sectors are combined using multiple frequencies and the aircraft will remain under your jurisdiction, transfer radio communication by specifying the following:

PHRASEOLOGY–
(Identification) CHANGE TO MY FREQUENCY (state frequency).

EXAMPLE–
"United two twenty-two change to my frequency one two three point four."

REFERENCE–
AIM, Para 4–2–3, Contact Procedures.

g. Avoid issuing a frequency change to helicopters known to be single-piloted during air-taxiing, hovering, or low-level flight. Whenever possible, relay necessary control instructions until the pilot is able to change frequency.

NOTE–
Most light helicopters are flown by one pilot and require the constant use of both hands and feet to maintain control.

Although Flight Control Friction Devices assist the pilot, changing frequency near the ground could result in inadvertent ground contact and consequent loss of control. Pilots are expected to advise ATC of their single-pilot status if unable to comply with a frequency change.

REFERENCE–
AIM, Para 4–3–14, Communications.

h. In situations where the controller does not want the pilot to change frequency but the pilot is expecting or may want a frequency change, use the following phraseology.

PHRASEOLOGY–
REMAIN THIS FREQUENCY.

REFERENCE–
FAAO JO 7110.65, Para 4–7–1, Clearance Information.
FAAO JO 7110.65, Para 5–12–9, Communication Transfer.

2–1–18. OPERATIONAL REQUESTS

Respond to a request from another controller, a pilot or vehicle operator by one of the following verbal means:

a. Restate the request in complete or abbreviated terms followed by the word "APPROVED." The phraseology "APPROVED AS REQUESTED" may be substituted in lieu of a lengthy readback.

PHRASEOLOGY–
(Requested operation) APPROVED.

or

APPROVED AS REQUESTED.

b. State restrictions followed by the word "APPROVED."

PHRASEOLOGY–
(Restriction and/or additional instructions, requested operation) APPROVED.

c. State the word "UNABLE" and, time permitting, a reason.

PHRASEOLOGY–
UNABLE (requested operation).

and when necessary,

(reason and/or additional instructions.)

d. State the words "STAND BY."

NOTE–
"STAND BY" is not an approval or denial. The controller acknowledges the request and will respond at a later time.

REFERENCE–
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.
FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments.
FAAO JO 7110.65, Para 7–9–3, Methods.

2–1–19. WAKE TURBULENCE

a. Apply wake turbulence procedures to an aircraft operating behind another aircraft when wake turbulence separation is required.

NOTE–
Para 5–5–4, Minima, subparagraphs g and h specify the required radar wake turbulence separations. Time-based separations are contained in Para 3-9-6, Same Runway Separation, Para 3-9-7, Wake Turbulence Separation for Intersection Departures, Para 3-9-8, Intersecting Runway Separation, Para 3-9-9, Nonintersecting Converging Runway Operations, Para 3-10-3, Same Runway Separation, Para 3-10-4, Intersecting Runway Separation, Para 6-1-4, Adjacent Airport Operation, Para 6-1-5, Arrival Minima, and Para 6-7-5, Interval Minima.

b. The separation minima must continue to touchdown for all IFR aircraft not making a visual approach or maintaining visual separation.

REFERENCE–
FAAO JO 7110.65, Para 5–9–5, Approach Separation Responsibility.

2–1–20. WAKE TURBULENCE CAUTIONARY ADVISORIES

a. Issue wake turbulence cautionary advisories including the position, altitude if known, and direction of flight to aircraft operating behind an aircraft that requires wake turbulence separation when:

REFERENCE–
AC 90–23, Aircraft Wake Turbulence, Pilot Responsibility, Para 11
FAAO JO 7110.65, Para 5-5-4,Minima, Subparagraph g

1. *TERMINAL.* VFR aircraft not being radar vectored are behind the larger aircraft.

2. IFR aircraft accept a visual approach or visual separation.

REFERENCE–
FAAO JO 7110.65, Para 7–4–1, Visual Approach.

3. *TERMINAL.* VFR arriving aircraft that have previously been radar vectored and the vectoring has been discontinued.

b. Issue cautionary information to any aircraft if in your opinion, wake turbulence may have an adverse effect on it. When traffic is known to be a super aircraft, include the word *super* in the description. When traffic is known to be a heavy aircraft, include the word *heavy* in the description.

NOTE–
Wake turbulence may be encountered by aircraft in flight as well as when operating on the airport movement area. Because wake turbulence is unpredictable, the controller is not responsible for anticipating its existence or effect. Although not mandatory during ground operations, controllers may use the words jet blast, propwash, or rotorwash, in lieu of wake turbulence, when issuing a caution advisory.

REFERENCE–
AC 90–23, Aircraft Wake Turbulence.
P/CG Term– Aircraft Classes.
P/CG Term– Wake Turbulence.

PHRASEOLOGY–
CAUTION WAKE TURBULENCE (traffic information).

REFERENCE–
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

2–1–21. TRAFFIC ADVISORIES

Unless an aircraft is operating within Class A airspace or omission is requested by the pilot, issue traffic advisories to all aircraft (IFR or VFR) on your frequency when, in your judgment, their proximity may diminish to less than the applicable separation minima. Where no separation minima applies, such as for VFR aircraft outside of Class B/Class C airspace, or a TRSA, issue traffic advisories to those aircraft on your frequency when in your judgment their proximity warrants it. Provide this service as follows:

a. To radar identified aircraft:

1. Azimuth from aircraft in terms of the 12–hour clock, or

2. When rapidly maneuvering aircraft prevent accurate issuance of traffic as in 1 above, specify the direction from an aircraft's position in terms of the eight cardinal compass points (N, NE, E, SE, S, SW, W, and NW). This method must be terminated at the pilot's request.

3. Distance from aircraft in miles.

4. Direction in which traffic is proceeding and/or relative movement of traffic.

NOTE–
Relative movement includes closing, converging, parallel same direction, opposite direction, diverging, overtaking, crossing left to right, crossing right to left.

5. If known, type of aircraft and altitude.

REFERENCE–
FAAO JO 7110.65, Para 2–4–21, Description of Aircraft Types.

PHRASEOLOGY–
TRAFFIC, (number) O'CLOCK,

or when appropriate,

(direction) (number) MILES, (direction)–BOUND and/or (relative movement),

and if known,

(type of aircraft and altitude).

or

When appropriate,

(type of aircraft and relative position), (number of feet) FEET ABOVE/BELOW YOU.

If altitude is unknown,

ALTITUDE UNKNOWN.

EXAMPLE–
"Traffic, eleven o'clock, one zero miles, southbound, converging, Boeing Seven Twenty Seven, one seven thousand."
"Traffic, twelve o'clock, one five miles, opposite direction, altitude unknown."
"Traffic, ten o'clock, one two miles, southeast bound, one thousand feet below you."

6. When requested by the pilot, issue radar vectors to assist in avoiding the traffic, provided the aircraft to be vectored is within your area of jurisdiction or coordination has been effected with the sector/facility in whose area the aircraft is operating.

7. If unable to provide vector service, inform the pilot.

REFERENCE–
FAAO JO 7110.65, Para 2–1–18, Operational Requests.

8. Inform the pilot of the following when traffic you have issued is not reported in sight:

(a) The traffic is no factor.

(b) The traffic is no longer depicted on radar.

PHRASEOLOGY–
TRAFFIC NO FACTOR/NO LONGER OBSERVED,

or

(number) O'CLOCK TRAFFIC NO FACTOR/NO LONGER OBSERVED,

or

(direction) TRAFFIC NO FACTOR/NO LONGER OBSERVED.

b. To aircraft that are not radar identified:

1. Distance and direction from fix.

2. Direction in which traffic is proceeding.

3. If known, type of aircraft and altitude.

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

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

and if known,

(type of aircraft and altitude),

ESTIMATED (fix) (time),

or

TRAFFIC, NUMEROUS AIRCRAFT VICINITY (location).

If altitude is unknown,

ALTITUDE UNKNOWN.

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

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

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

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

2–1–22. BIRD ACTIVITY INFORMATION

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

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

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

2–1–23. TRANSFER OF POSITION RESPONSIBILITY

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

2–1–24. WHEELS DOWN CHECK

USA/USAF/USN

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

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

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

PHRASEOLOGY–
CHECK WHEELS DOWN.

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

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

2. To aircraft conducting instrument approaches and remaining on the radar facility's frequency,

before the aircraft passes the outer marker/final approach fix.

PHRASEOLOGY–
WHEELS SHOULD BE DOWN.

2–1–25. SUPERVISORY NOTIFICATION

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

a. Weather.

b. Equipment status.

c. Potential sector overload.

d. Emergency situations.

e. Special flights/operations.

f. Possible suspicious aircraft/pilot activity as prescribed in FAA Order JO 7610.4, paragraph 7–3–1.

2–1–26. PILOT DEVIATION NOTIFICATION

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

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

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

2–1–27. TCAS RESOLUTION ADVISORIES

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

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

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

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

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

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

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

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

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

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

2–1–28. RVSM OPERATIONS

Controller responsibilities must include but not be limited to the following:

a. Non–RVSM aircraft operating in RVSM airspace.

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

NOTE–
The operations supervisor/CIC is responsible for system acceptance of a non–RVSM aircraft beyond the initial sector–to–sector coordination following the pilot request to access the airspace. Operations supervisor/CIC responsibilities are defined in FAAO JO 7210.3, Chapter 6, Section 9, Reduced Vertical Separation Minimum (RVSM).

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

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

b. Non–RVSM aircraft transitioning RVSM airspace.

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

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

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

EXAMPLE–
"Point out Baxter21 climbing to FL 360, negative RVSM."

e. For the following situations, use the associated phraseology:

1. To deny clearance into RVSM airspace.

PHRASEOLOGY–
"UNABLE CLEARANCE INTO RVSM AIRSPACE."

2. To request a pilot to report when able to resume RVSM.

PHRASEOLOGY–
"REPORT ABLE TO RESUME RVSM."

f. In the event of a change to an aircraft's RVSM eligibility, amend the RVSM qualifier ("W") in the ICAO equipment string in order to properly identify non–RVSM aircraft on the controller display.

NOTE–
Changing the equipment suffix instead of amending the equipment string may result in incorrect revisions to other ICAO qualifiers.

REFERENCE–
AIM Para 5–1–9, International Flight Plan (FAA Form 7233–4) IFR Flights (For Domestic or International Flights)
AIM TBL 5–1–4 Aircraft COM, NAV, and Approach Equipment Qualifiers

2–1–29. TERRAIN AWARENESS WARNING SYSTEM (TAWS) ALERTS

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

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

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

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

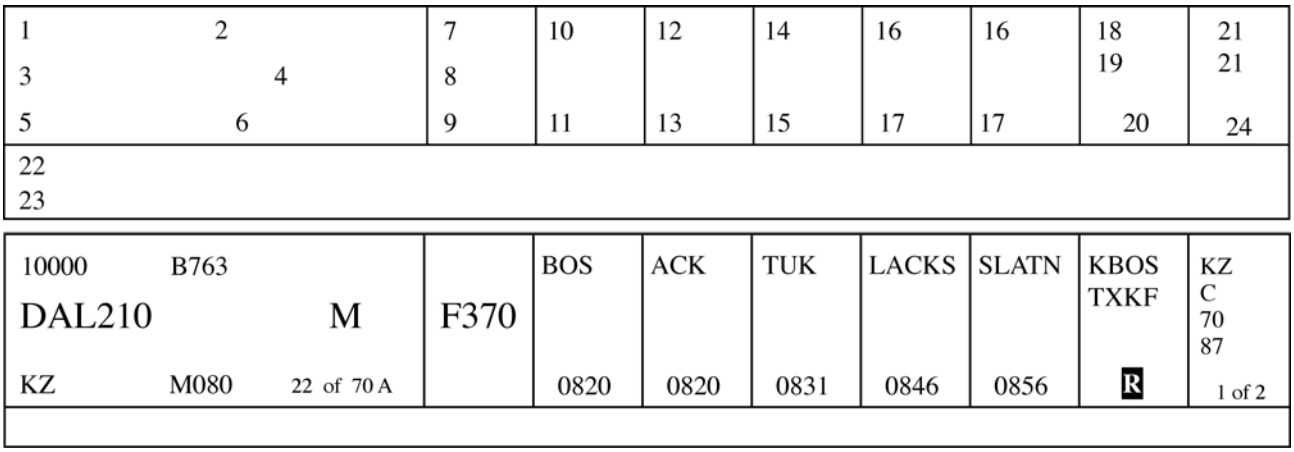
3. The responding aircraft has executed an alternate clearance and you observe that approved separation has been reestablished.

2–1–30. "BLUE LIGHTNING" EVENTS

Ensure that the supervisor/controller–in–charge (CIC) is notified of reports of possible human trafficking. These may be referred to as "Blue Lightning" events.

2–3–3. OCEANIC DATA ENTRIES

FIG 2–3–3



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. Indicators are available for: M – Mach Number Technique (MNT), R – Reduced MNT, D or 3 – Distance–based longitudinal separation using 50 NM (D) or 30 NM (3), and W– Reduced Vertical Separation Minimum (RVSM). 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).

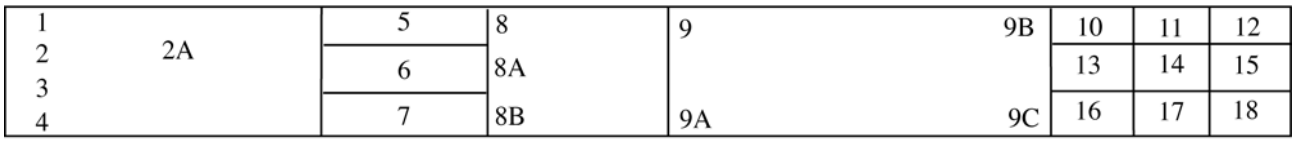
b. Standard annotations and abbreviations for Field 22 may be specified by facility directives.

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, heavy aircraft indicator "H/" if appropriate, 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. (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; **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.

Section 6. Weather Information

2–6–1. FAMILIARIZATION

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

2–6–2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)

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

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

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

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

b. Controllers outside of commissioned HIWAS areas must:

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

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

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

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

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

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

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

2–6–3. PIREP INFORMATION

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

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

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

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

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

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

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

3. Thunderstorms and related phenomena.

4. Turbulence of moderate degree or greater.

5. Icing of light degree or greater.

6. Wind shear.

7. Volcanic ash clouds.

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

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

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

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

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

b. Record with the PIREPs:

1. Time.

2. Aircraft position.

3. Type aircraft.

4. Altitude.

5. When the PIREP involves icing include:

(a) Icing type and intensity.

(b) Air temperature in which icing is occurring.

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

PHRASEOLOGY–
REQUEST/SAY FLIGHT CONDITIONS.

Or if appropriate,

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

If necessary,

OVER (fix),

or

ALONG PRESENT ROUTE,

or

BETWEEN (fix) AND (fix).

d. Handle PIREPs as follows:

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

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

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

(a) The appropriate intrafacility positions.

(b) The FLM/CIC for long line dissemination via an FAA approved electronic system (for example, AIS–R, or similar systems); or,

(c) Outside Alaska: The overlying ARTCC's Flight Data Unit for long–line dissemination; or,

(d) Alaska Only: The FSS serving the area in which the report was obtained.

NOTE–
The FSS in Alaska is responsible for long line dissemination.

REFERENCE–
FAAO JO 7110.65, Para 2–1–2, Duty Priority.

(e) Other concerned terminal or en route ATC facilities, including non–FAA facilities.

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

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

"U.S. Air Seventy–six, a D–C Niner, previously reported wind shear, gain of Twenty–Five knots between Niner Hun-

dred and Six Hundred feet, followed by a loss of Five Zero knots between Five Hundred feet and the surface."

REFERENCE–
AIM, Para 7–1–24, Wind Shear PIREPs.

2–6–4. WEATHER AND CHAFF SERVICES

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

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

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

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

or

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

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

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

1. LIGHT.

2. MODERATE.

3. HEAVY.

4. EXTREME.

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

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

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

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

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

REFERENCE–
P/CG Term– Precipitation Radar Weather Descriptions.

d. When precipitation intensity information is not available.

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

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

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

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

1. Describe the lowest displayable precipitation intensity as MODERATE.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

i. When forwarding weather deviation information, the transferring controller must clearly coordinate the nature of the route guidance service being provided. This coordination should include,

but is not limited to: assigned headings, suggested headings, pilot-initiated deviations. Coordination can be accomplished by: verbal, automated, or pre-arranged procedures. Emphasis should be made between: controller assigned headings, suggested headings, or pilot initiated deviations.

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

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

j. En Route Fourth Line Data Transfer

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

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

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

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

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

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

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

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

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

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

2–6–5. CALM WIND CONDITIONS

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

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

2–6–6. REPORTING WEATHER CONDITIONS

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

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

2. Forward tower visibility observations to the weather observer.

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

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

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

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

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

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

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

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

2–6–7. DISSEMINATING WEATHER INFORMATION

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

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

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

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

NOTE–
USAF controllers do not serve as official weather observers.

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

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

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

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

Section 9. Automatic Terminal Information Service Procedures

2–9–1. APPLICATION

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

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

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

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

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

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

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

2–9–2. OPERATING PROCEDURES

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

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

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

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

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

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

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

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

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

EXAMPLE–
"Verify you have information ALPHA."

"Information BRAVO now current, visibility three miles."

"Information CHARLIE now current, Ceiling 1500 Broken."

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

2–9–3. CONTENT

a. Include the following in ATIS broadcast as appropriate:

1. Airport/facility name.

2. Phonetic letter code.

3. Time of the latest weather sequence (UTC).

4. Weather information consisting of:

(a) Wind direction and velocity.

(b) Visibility.

(c) Obstructions to vision.

(d) Present weather consisting of: sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate, and other pertinent remarks included in the official weather observation.

5. Instrument approach and runway in use.

Temperature and dew point should be reported from certified direct reading sensors when available. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1. Available runway length, as stated in the NOTAM, must be included in the ATIS broadcast.

This information must be broadcast for the duration of the construction project.

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

PHRASEOLOGY–

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

EXAMPLE–

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

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

PHRASEOLOGY–

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

EXAMPLE–

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

REFERENCE–

FAAO JO 7110.65, Para 3–3–5, Braking Action Advisories.

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

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

REFERENCE–

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

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

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

EXAMPLE–

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

Chapter 3. Airport Traffic Control– Terminal

Section 1. General

3–1–1. PROVIDE SERVICE

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

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

3–1–2. PREVENTIVE CONTROL

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

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

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

3–1–3. USE OF ACTIVE RUNWAYS

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

NOTE–
Exceptions may be authorized only as provided in para 1–1–11, Constraints Governing Supplements and Procedural Deviations, and FAAO JO 7210.3, Facility Operation and Administration, para 10–1–7, Use of Active Runways, where justified by extraordinary circumstances at specific locations.

REFERENCE–
FAAO JO 7110.65, Para 1–1–11, Constraints Governing Supplements and Procedural Deviations.
FAAO JO 7210.3, Para 10–1–7, Use of Active Runways.

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

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

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

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

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

d. *USA/USAF/USN NOT APPLICABLE.* Authorization for aircraft/vehicles to taxi/proceed on or along an active runway, for purposes other than crossing, must be provided via direct communications on the appropriate local control frequency. This authorization may be provided on the ground control frequency after coordination with local control is completed for those operations specifically described in a facility directive.

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

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

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

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

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

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

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

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

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

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

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

a. Vehicles, equipment, and personnel in direct communications with the control tower may be authorized to operate up to the edge of an active runway surface when necessary. Provide advisories as specified in Paragraph 3–1–6, Traffic Information, and Paragraph 3–7–5, Precision Approach Critical Area, as appropriate.

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

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

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

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

REFERENCE–
FAAO JO 7110.65, Para 3–7–4, Runway Proximity.
FAAO JO 7110.65, Para 3–8–2, Touch-and-Go or Stop-and-Go or Low Approach.
FAAO JO 7110.65, Para 3–10–10, Altitude Restricted Low Approach.
AC 150/5300–13, Airport Design.
AC 150/5340–1G, Standards for Airport Markings.
14 CFR Section 91.129, Operations in Class D Airspace.
AIM, Para 2–2–3, Obstruction Lights.
P/CG Term– Runway in Use/Active Runway/Duty Runway.

3–1–6. TRAFFIC INFORMATION

a. Describe vehicles, equipment, or personnel on or near the movement area in a manner which will assist pilots in recognizing them.

EXAMPLE–
"Mower left of runway two seven."
"Trucks crossing approach end of runway two five."
"Workman on taxiway Bravo."
"Aircraft left of runway one eight."

b. Describe the relative position of traffic in an easy to understand manner, such as "to your right" or "ahead of you."

EXAMPLE–
1. *"Traffic, U.S. Air MD–Eighty on downwind leg to your left."*
2. *"King Air inbound from outer marker on straight-in approach to runway one seven."*
3. *"Traffic, Boeing 737 on 2–mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."*

c. When using a CTRD, you may issue traffic advisories using the standard radar phraseology prescribed in para 2–1–21, Traffic Advisories.

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

3–1–7. POSITION DETERMINATION

Determine the position of an aircraft before issuing taxi instructions or takeoff clearance.

NOTE–
The aircraft's position may be determined visually by the controller, by pilots, or through the use of the ASDE.

3–1–8. LOW LEVEL WIND SHEAR/ MICROBURST ADVISORIES

a. When low level wind shear/microburst is reported by pilots, Integrated Terminal Weather System (ITWS), or detected on wind shear detection systems such as LLWAS NE++, LLWAS–RS, WSP, or TDWR, controllers must issue the alert to all arriving and departing aircraft. Continue the alert to aircraft until it is broadcast on the ATIS and pilots indicate they have received the appropriate ATIS code. A statement must be included on the ATIS for 20 minutes following the last report or indication of the wind shear/microburst.

PHRASEOLOGY–
LOW LEVEL WIND SHEAR (or MICROBURST, as appropriate) ADVISORIES IN EFFECT.

NOTE–
Some aircraft are equipped with Predictive Wind Shear (PWS) alert systems that warn the flight crew of a potential wind shear up to 3 miles ahead and 25 degrees either side of the aircraft heading at or below 1200' AGL. Pilot reports may include warnings received from PWS systems.

REFERENCE–
FAAO JO 7110.65, Para 2–6–3, PIREP Information.
FAAO JO 7110.65, Para 2–9–3, Content.
FAAO JO 7110.65, Para 3–10–1, Landing Information.

b. At facilities without ATIS, ensure that wind shear/microburst information is broadcast to all arriving and departing aircraft for 20 minutes following the last report or indication of wind shear/microburst.

1. At locations equipped with LLWAS, the local controller must provide wind information as follows:

NOTE–
The LLWAS is designed to detect low level wind shear conditions around the periphery of an airport. It does not detect wind shear beyond that limitation.

REFERENCE–
FAAO JO 7210.3, Para 10–3–3, Low Level Wind Shear/Microburst Detection Systems.

(a) If an alert is received, issue the airport wind and the displayed field boundary wind.

PHRASEOLOGY–
WIND SHEAR ALERT. AIRPORT WIND (direction) AT (velocity). (Location of sensor) BOUNDARY WIND (direction) AT (velocity).

(b) If multiple alerts are received, issue an advisory that there are wind shear alerts in two/several/all quadrants. After issuing the advisory, issue the airport wind in accordance with para 3–9–1, Departure Information, followed by the field boundary wind most appropriate to the aircraft operation.

PHRASEOLOGY–
WIND SHEAR ALERTS TWO/SEVERAL/ALL QUADRANTS. AIRPORT WIND (direction) AT (velocity). (Location of sensor) BOUNDARY WIND (direction) AT (velocity).

(c) If requested by the pilot, issue specific field boundary wind information even though the LLWAS may not be in alert status.

NOTE–
The requirements for issuance of wind information remain valid as appropriate under this paragraph, para 3–9–1, Departure Information and para 3–10–1, Landing Information.

2. Wind shear detection systems, including TDWR, WSP, LLWAS NE++ and LLWAS–RS provide the capability of displaying microburst alerts, wind shear alerts, and wind information oriented to the threshold or departure end of a runway. When detected, the associated ribbon display allows the controller to read the displayed alert without any need for interpretation.

(a) If a wind shear or microburst alert is received for the runway in use, issue the alert information for that runway to arriving and departing aircraft as it is displayed on the ribbon display.

PHRASEOLOGY–
(Runway) (arrival/departure) WIND SHEAR/ MICROBURST ALERT, (windspeed) KNOT GAIN/LOSS, (location).

EXAMPLE–
17A MBA 40K – 3MF

PHRASEOLOGY–
RUNWAY 17 ARRIVAL MICROBURST ALERT 40 KNOT LOSS 3 MILE FINAL.

EXAMPLE–
17D WSA 25K+ 2MD

PHRASEOLOGY–
RUNWAY 17 DEPARTURE WIND SHEAR ALERT 25 KNOT GAIN 2 MILE DEPARTURE.

(b) If requested by the pilot or deemed appropriate by the controller, issue the displayed wind information oriented to the threshold or departure end of the runway.

PHRASEOLOGY–
(Runway) DEPARTURE/THRESHOLD WIND (direction) AT (velocity).

(c) LLWAS NE++ or LLWAS−RS may detect a possible wind shear/microburst at the edge of the system but may be unable to distinguish between a wind shear and a microburst. A wind shear alert message will be displayed, followed by an asterisk, advising of a possible wind shear outside of the system network.

NOTE–
LLWAS NE++ when associated with TDWR can detect wind shear/microbursts outside the network if the TDWR fails.

PHRASEOLOGY–
(Appropriate wind or alert information) POSSIBLE WIND SHEAR OUTSIDE THE NETWORK.

(d) If unstable conditions produce multiple alerts, issue an advisory of multiple wind shear/microburst alerts followed by specific alert or wind information most appropriate to the aircraft operation.

PHRASEOLOGY–
MULTIPLE WIND SHEAR/MICROBURST ALERTS (specific alert or wind information).

(e) The LLWAS NE++ and LLWAS−RS are designed to operate with as many as 50 percent of the total sensors inoperative. When all three remote sensors designated for a specific runway arrival or departure wind display line are inoperative then the LLWAS NE++ and LLWAS−RS for that runway arrival/departure must be considered out of service. When a specific runway arrival or departure wind display line is inoperative and wind shear/microburst activity is likely; (for example, frontal activity, convective storms, PIREPs), the following statement must be included on the ATIS, "WIND SHEAR AND MICROBURST INFORMATION FOR RUNWAY (runway number) ARRIVAL/DEPARTURE NOT AVAILABLE."

NOTE–
The geographic situation display (GSD) is a supervisory planning tool and is not intended to be a primary tool for microburst or wind shear.

c. Wind Shear Escape Procedures.

1. If an aircraft under your control informs you that it is performing a wind shear escape, do not issue control instructions that are contrary to pilot actions. ATC should continue to provide safety alerts regarding terrain or obstacles and traffic advisories for the escape aircraft, as appropriate.

EXAMPLE–
"Denver Tower, United 1154, wind shear escape."

NOTE–
Aircraft that execute a wind shear escape maneuver will usually conduct a full power climb straight ahead and will not accept any control instructions until onboard systems advise the crew or the pilot in command (PIC) advises ATC that the escape maneuver is no longer required.

REFERENCE–
P/CG Term – Wind Shear Escape

2. Unless advised by additional aircraft that they are also performing an escape procedure, do not presume that other aircraft in the proximity of the escape aircraft are responding to wind shear alerts/events as well. Continue to provide control instructions, safety alerts, and traffic advisories, as appropriate.

3. Once the responding aircraft has initiated a wind shear escape maneuver, the controller is not responsible for providing approved separation between the aircraft that is responding to an escape and any other aircraft, airspace, terrain, or obstacle. Responsibility for approved separation resumes when one of the following conditions are met:

(a) Departures:

(1) A crew member informs ATC that the wind shear escape maneuver is complete and ATC observes that approved separation has been re-established, or

(2) A crew member informs ATC that the escape maneuver is complete and has resumed a previously assigned departure clearance/routing.

(b) Arrivals:

(1) A crew member informs ATC that the escape maneuver is complete, and

(2) The aircrew has executed an alternate clearance or requested further instructions.

NOTE–
When the escape procedure is complete, the flight crew must advise ATC they are returning to their previously assigned clearance or request further instructions.

EXAMPLE–
"Denver Tower, United 1154, wind shear escape complete, resuming last assigned heading/(name) DP/clearance."

Or

"Denver Tower, United 1154, wind shear escape complete, request further instructions."

Section 7. Taxi and Ground Movement Procedures

3–7–1. GROUND TRAFFIC MOVEMENT

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

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

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

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

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

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

"Airport 1 proceed on taxi way B, hold short of Runway18L."

"Airport 1 proceed on Runway 26R." (additional instructions as necessary.)

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

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

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

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

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

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

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

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

e. Do not use the term "full length" when the runway length available for departures has been temporarily shortened. On permanently shortened runways, do not use the term "full length" until the

Chart Supplement U.S. is updated to include the change(s).

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

3–7–2. TAXI AND GROUND MOVEMENT OPERATIONS

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

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

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

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

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

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

PHRASEOLOGY–
HOLD POSITION.

HOLD FOR (reason)

CROSS (runway/taxiway), at (runway/taxiway)

or

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

or

ON (runway number or taxiways, etc.),

or

TO (location),

or

(direction),

or

ACROSS RUNWAY (number), at (runway/taxiway).

or

VIA (route), HOLD SHORT OF (location)

or

FOLLOW (traffic) (restrictions as necessary)

or

BEHIND (traffic).

EXAMPLE–
"Cross Runway Two–Eight Left, at taxiway Alpha, hold short of Runway Two–Eight Right."

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

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

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

or

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

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

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

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

or

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

EXAMPLE–
“Runway Three–Six Left, taxi via taxiway Alpha, hold short of taxiway Charlie.”

or

“Runway Three–Six Left, taxi via Alpha, hold short of Charlie.”

or

“Runway Three–Six Left, taxi via taxiway Alpha, hold short of Runway Two–Seven Right.”

or

“Runway Three–Six Left, taxi via Charlie, cross Runway Two–Seven Left, hold short of Runway Two–Seven Right.”

or

“Runway Three–Six Left, taxi via Alpha, Charlie, cross Runway One–Zero.”

c. Aircraft must receive a clearance for each runway their route crosses. An aircraft must have crossed a previous runway before another runway crossing clearance may be issued. At those airports where the taxi distance between runway centerlines is 1,300 feet or less, multiple runway crossings may be issued with a single clearance. The air traffic manager must submit a request to the appropriate Service Area Director of Operations for approval before authorizing multiple runway crossings.

NOTE–
Controllers should avoid crossing points that are not perpendicular or nearly perpendicular to the runway to be crossed, (for example, reverse high speed taxiways).

PHRASEOLOGY–
“Cross (runway) at(runway/taxiway), hold short of (runway)”, or
Cross (runways) at (runway/taxiway).

EXAMPLE–
“Cross Runway One–Six Left at Taxiway Bravo, hold short of Runway One–Six Right.”
“Cross Runway One–Six Left and Runway One–Six Right at Taxiway Bravo.”

REFERENCE–
FAAO JO 7210.3, Para 10–3–10 Multiple Runway Crossings.

d. When an aircraft/vehicle is instructed to “follow” traffic and requires a runway crossing, issue a runway crossing clearance in addition to the follow instructions and/or hold short instructions, as applicable.

EXAMPLE–
“Follow (traffic), cross Runway Two–Seven Right, at Taxiway Whiskey”

or

“Follow (traffic), cross Runway Two Seven–Right at Taxiway Whiskey, hold short of Runway Two–Seven Left.”

e. Vehicles must receive a clearance for each runway their route crosses. A vehicle must have crossed a previous runway before another runway crossing clearance may be issued.

NOTE–
A clearance is required for vehicles to operate on any active, inactive, or closed runway except for vehicles operating on closed runways in accordance with a Letter of Agreement (LOA).

f. Crossing of active runway(s) by aircraft/vehicle(s):

1. During departure operations, ensure that aircraft/vehicles intending to cross a runway do not cross the runway holding position markings until the controller visually observes the departure aircraft in a turn, or the departure aircraft has passed the point where the crossing aircraft/vehicle is located, regardless of altitude, unless authorized in FAA Order JO 7110.65, Para. 3–10–10, Altitude Restricted Low Approach.

REFERENCE–
AIM, Runway Position Holding Markings, Para 2–3–5a
FAAO 7110.65, 3–10–10, Altitude Restricted Low Approach

2. During arrival operations, ensure the following:

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

REFERENCE–
P/CG Term – Clear of Runway

(b) A crossing aircraft/vehicle will not cross the runway holding position markings until the arrival has landed and either:

(1) The controller has confirmed by verbal commitment from the pilot that the arriving aircraft will exit the runway prior to the point at which the crossing is intended, or

(2) The controller visually observes the aircraft exiting the runway prior to the point at which the crossing is intended, or

(3) The arriving aircraft has passed the point at which the crossing is intended.

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

PHRASEOLOGY–
READ BACK HOLD INSTRUCTIONS.

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

or

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

"American Four Ninety Two, Roger."

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

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

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

"American Sixty Three, Roger."

"American Sixty Three, read back hold instructions."

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

or

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

"OPS Three, Roger."

"OPS Three, read back hold instructions."

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

h. Issue progressive taxi/ground movement instructions when:

1. A pilot/operator requests.

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

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

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

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

i. Issue instructions to expedite a taxiing aircraft or a moving vehicle.

PHRASEOLOGY–
TAXI WITHOUT DELAY (traffic if necessary).

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

j. Issue instructions to aircraft/vehicle to hold short of an approach hold area.

PHRASEOLOGY–
HOLD SHORT OF (runway) APPROACH

3–7–3. GROUND OPERATIONS

WAKE TURBULENCE APPLICATION

Avoid clearances which require:

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

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

NOTE–
Use caution when taxiing smaller aircraft/helicopters in the vicinity of larger aircraft.

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

3–7–4. RUNWAY PROXIMITY

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

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

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

c. Issue traffic information as necessary.

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

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

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

3–7–5. PRECISION APPROACH CRITICAL AREA

a. ILS critical area dimensions are described in FAA Order 6750.16, Siting Criteria for Instrument Landing Systems. Aircraft and vehicle access to the ILS critical area must be controlled to ensure the integrity of ILS course signals whenever the official weather observation is a ceiling of less than 800 feet or visibility less than 2 miles. Do not authorize vehicles/aircraft to operate in or over the critical area, except as specified in subparagraph a1, whenever an arriving aircraft is inside the ILS outer marker (OM) or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway.

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

NOTE–
All available weather sources METARs/SPECI/PIREPS/ Controller observations are reported ceilings and/or visibilities and must be disseminated as described in 7110.65 and 7210.3

REFERENCE–
FAAO JO 7110.65, Para 2–6–3, PIREP Information
FAAO JO 7210.3, Para 2–9–2, Receipt and Dissemination of Weather Observations
FAAO JO 7210.3, Para 10–3–1, SIGMENT and PIREP Handling
FAAO JO 7900.5, Para 6.4d, Equipment for Sky Condition

1. LOCALIZER CRITICAL AREA

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

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

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

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

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

b. Operators commonly conduct “coupled” or “autoland” approaches to satisfy maintenance, training, or reliability program requirements. Promptly issue an advisory if the critical area will not be protected when an arriving aircraft advises that a “coupled,” “CATIII,” “autoland,” or similar type approach will be conducted and the official weather observation indicates a ceiling of 800 feet or more, or the visibility is 2 miles or more.

PHRASEOLOGY–
ILS CRITICAL AREA NOT PROTECTED.

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

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

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

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

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

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

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

NOTE–
1. *The POFZ and the close–in portion of the final approach obstacle clearance surfaces protect aircraft executing a missed approach. Their dimensions are described in FAAO 8260.3b, Volume III, Chapter 3, para 3.4, United States Standards for Terminal Instrument Procedures.*

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

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

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

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

TAXIING AIRCRAFT/VEHICLE LEFT/RIGHT OF RUNWAY.

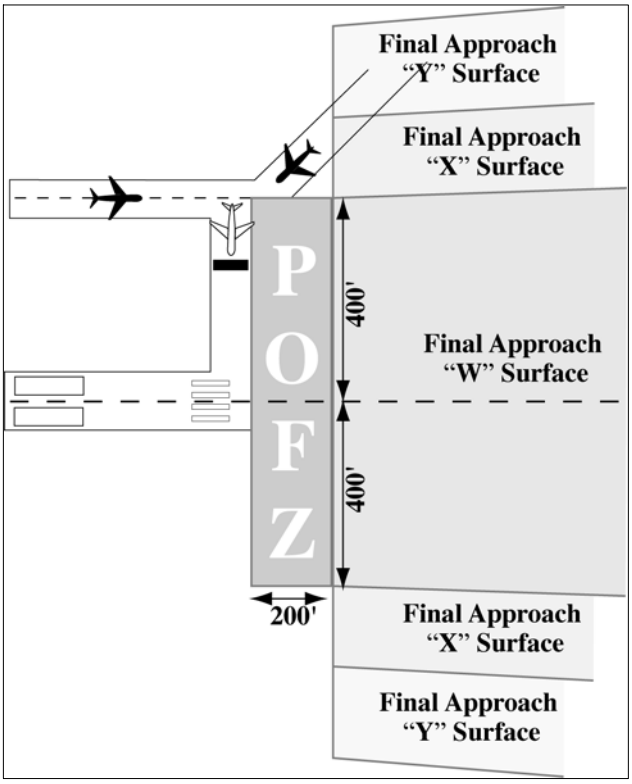
EXAMPLE–
"United 623, in the event of missed approach, taxiing aircraft right of runway."

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

REFERENCE–
FAAO JO 7110.65, Para 3–1–6, Traffic Information.

FIG 3–7–1

Precision Obstacle Free Zone (POFZ)



Section 8. Spacing and Sequencing

3–8–1. SEQUENCE/SPACING APPLICATION

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

PHRASEOLOGY–
CLEARED FOR TAKEOFF.

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

EXTEND DOWNWIND.

MAKE SHORT APPROACH.

NUMBER (landing sequence number),

FOLLOW (description and location of traffic),

or if traffic is utilizing another runway,

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

TRAFFIC (description and location) LANDING THE PARALLEL RUNWAY

CIRCLE THE AIRPORT.

MAKE LEFT/RIGHT THREE–SIXTY/TWO SEVENTY.

GO AROUND (additional instructions as necessary).

CLEARED TO LAND.

CLEARED:

TOUCH–AND–GO,
or

STOP–AND–GO,
or

LOW APPROACH.

CLEARED FOR THE OPTION,

or

OPTION APPROVED,

or

UNABLE OPTION, (alternate instructions).

or

UNABLE (type of option), OTHER OPTIONS APPROVED.

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

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

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

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

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

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

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

3–8–3. SIMULTANEOUS SAME DIRECTION OPERATION

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

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

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

c. The distance between the parallel runways or landing strips is in accordance with those specified in TBL 3–8–1.

TBL 3–8–1
Same Direction Distance Minima

Aircraft category	Minimum distance (feet) between parallel	
	Runway centerlines	Edges of adjacent strips or runway and strip
Category I or Category II	300	200
If either aircraft is a Category III	500	400
If either aircraft is a Heavy	700	600

NOTE–
1. *Aircraft Categories specified in Table 3–8–1 are Same Runway Separation (SRS) categories as indicated in Paragraph 3–9–6, Same Runway Separation.*

2. *When conducting Simultaneous Same Direction Operations (SSDO), applicable Wake Turbulence provisions apply.*

3–8–4. SIMULTANEOUS OPPOSITE DIRECTION OPERATION

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

a. Operations are conducted in VFR conditions.

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

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

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

TBL 3–8–2
Opposite Direction Distance Minima

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

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–
FAAO 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–
FAAO JO 7210.3, Para 2–10–6, Broadcast Density Altitude Advisory.

g. Issue braking action for the runway in use as received from pilots or the airport management when Braking Action Advisories are in effect.

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

h. 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–
FAAO JO 7210.3, Para 10–4–3, 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–
FAAO 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 subpara g, when takeoff clearances cannot be issued because of traffic. Issue traffic information to any aircraft so authorized. Traffic information may be omitted when the traffic is another aircraft which has landed on or is taking off the runway and is clearly visible to the holding aircraft. Do not use conditional phrases such as "behind landing traffic" or "after the departing aircraft."

b. First state the runway number followed by the line up and wait clearance.

PHRASEOLOGY–
RUNWAY (number), LINE UP AND WAIT.

c. Procedures.

1. At facilities without a safety logic system or facilities with the safety logic system in the limited configuration:

(a) Do not issue a landing clearance to an aircraft requesting a full–stop, touch–and–go, stop–and–go, option, or unrestricted low approach on the same runway with an aircraft that is holding in position or taxiing to line up and wait until the aircraft in position starts takeoff roll.

PHRASEOLOGY–
RUNWAY (number), CONTINUE, TRAFFIC HOLDING IN POSITION,

or

RUNWAY (number) (pattern instructions as appropriate) TRAFFIC HOLDING IN POSITION.

EXAMPLE–
"American 528, Runway Two–Three continue, traffic holding in position."

"Twin Cessna Four Four Golf, Runway One–Niner Right, base approved, traffic holding in position."

"Baron Two Five Foxtrot, Runway One–Niner, extend downwind, tower will call your base, traffic holding in position."

(b) Do not authorize an aircraft to LUAW if an aircraft has been cleared to land, touch–and–go, stop–and–go, option, or unrestricted low approach on the same runway.

2. Except when reported weather conditions are less than ceiling 800 feet or visibility less than 2 miles, facilities using the safety logic system in the full core alert mode:

(a) May issue a landing clearance for a full–stop, touch–and–go, stop–and–go, option, or unrestricted low approach to an arriving aircraft with an aircraft holding in position or taxiing to LUAW on the same runway, or

(b) May authorize an aircraft to LUAW when an aircraft has been cleared for a full stop, touch–and–go, stop–and–go, option, or unrestricted low approach on the same runway.

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

d. When an aircraft is authorized to line up and wait, inform it of the closest traffic within 6–flying miles requesting a full–stop, touch–and–go, stop–and– go, option, or unrestricted low approach to the same runway.

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

e. *USAF/USN*. When an aircraft is authorized to line up and wait, inform it of the closest traffic within 6 miles on final approach to the same runway. If the approaching aircraft is on a different frequency, inform it of the aircraft taxiing into position.

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

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

1. The procedure must be approved by the appropriate Service Area Director of Air Traffic Operations.

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

3. The runway must be used as a departure–only runway.

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

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

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

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

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

PHRASEOLOGY–
CONTINUE HOLDING,

or

TAXI OFF THE RUNWAY.

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

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

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

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

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

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

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

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

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

1. HOLD SHORT OF RUNWAY, *or*

2. HOLD IN POSITION.

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

PHRASEOLOGY–
CONTINUE HOLDING,

or

TAXI OFF THE RUNWAY.

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

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

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

o. When two or more aircraft call the tower ready for departure, one or more at the full length of a runway and one or more at an intersection, state the location of the aircraft at the full length of the runway when authorizing that aircraft to line up and wait.

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

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

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

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

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

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

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

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

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

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

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

3–9–5. ANTICIPATING SEPARATION

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

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

3–9–6. SAME RUNWAY SEPARATION

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

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

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

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

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

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

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

FIG 3–9–1
Same Runway Separation [View 1]

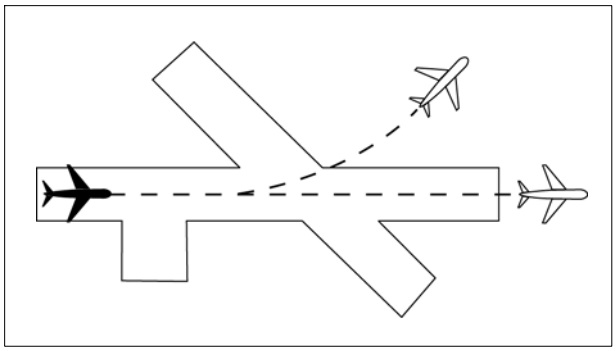
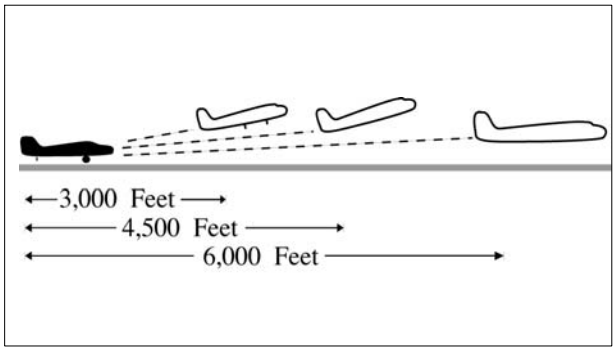


FIG 3–9–2
Same Runway Separation [View 2]



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

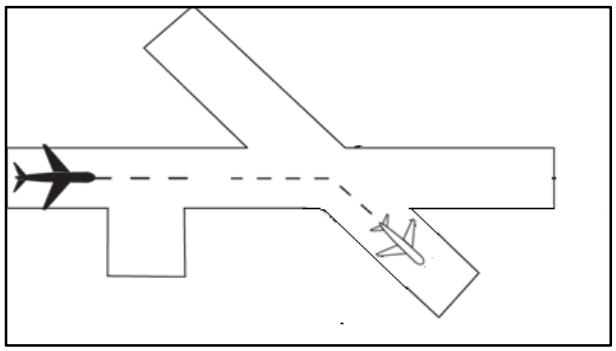
CATEGORY I – small single–engine propeller driven aircraft weighing 12,500 lbs. or less, and all helicopters.

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 Para 3–1–14, Ground Operations When Volcanic Ash is Present.

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

REFERENCE–
AC 90–23, Aircraft Wake Turbulence.

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

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

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

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

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

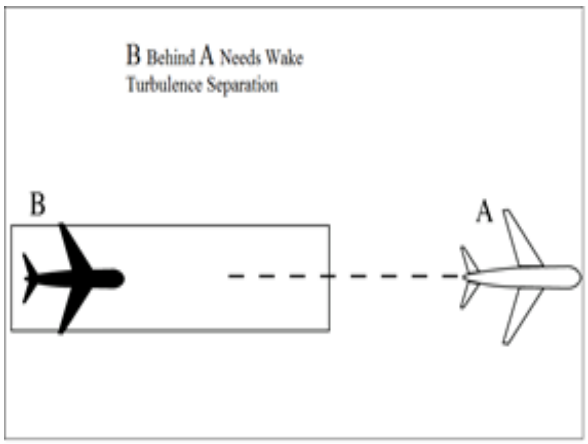
2. Heavy, large, or small behind heavy – *2 minutes.*

g. Separate a small behind a B757 aircraft by *2 minutes* when departing:

1. The same runway.

2. A parallel runway separated by less than 2,500 feet if flight paths will cross.

FIG 3–9–4
Same Runway Separation



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

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

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

3. Small behind B757 – *2 minutes.*

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

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

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

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

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

PHRASEOLOGY–
HOLD FOR WAKE TURBULENCE.

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

l. Separate a small aircraft behind a large aircraft (except B757) that has departed or made a low/missed approach when utilizing opposite direction takeoffs on the same runway by *3 minutes* unless a pilot has initiated a request to deviate from the time interval. In the latter case, issue a wake turbulence cautionary advisory before clearing the aircraft for takeoff. Controllers must not initiate or suggest a waiver of the time interval.

NOTE–
A request for takeoff does not initiate a waiver request.

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

3–9–7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES

a. Apply the following wake turbulence criteria for intersection departures:

1. Separate a small aircraft weighing 12,500 lbs. or less taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing small aircraft weighing more than 12,500 lbs. by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

2. Separate a small aircraft taking off from an intersection on the same runway (same or opposite direction takeoff) behind a departing large aircraft (except B757) by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

3. Separate a small aircraft taking off from an intersection (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:

(a) The same runway.

(b) Parallel runways separated by less than 2,500 feet, or parallel runways separated by less than 2,500 feet with the runway thresholds offset by 500 feet or more, if flight paths will cross.

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:

NOTE–
Apply Para 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.

(a) Heavy, large, or small behind super - *4 minutes.*

(b) Heavy, large, or small behind heavy - *3 minutes.*

5. 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–
FAAO JO 7110.65, Para 3–8–2, Touch–and–Go or Stop–and–Go or Low Approach.

b. The time interval is not required when:

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

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

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

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

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

REFERENCE–
FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.
FAAO 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 subpara 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 subpara b1 or b2.

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

REFERENCE–
FAAO JO 7110.65, Para 3–9–6, Same Runway Separation.

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

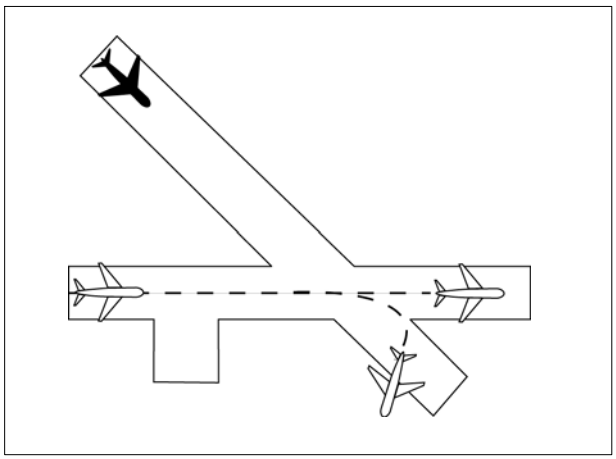
a. Issue traffic information to each aircraft operating on intersecting runways.

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–
FAAO 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 3–9–5).

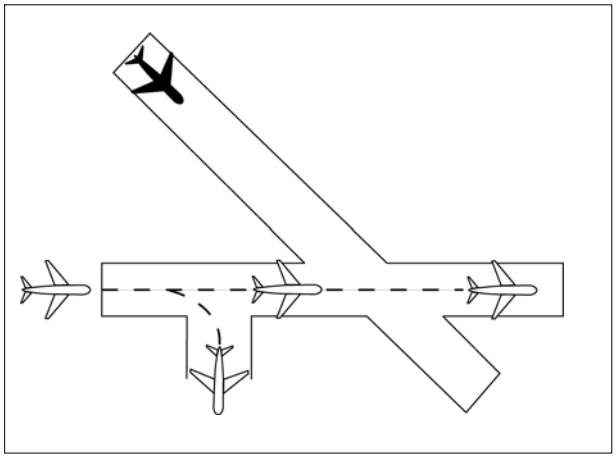
FIG 3–9–5
Intersecting Runway Separation



2. A preceding arriving aircraft is clear of the landing runway, completed the landing roll and will hold short of the intersection, or has passed the intersection. (See FIG 3-9-6).

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

FIG 3–9–6
Intersecting Runway Separation



WAKE TURBULENCE APPLICATION

3. Separate IFR/VFR aircraft taking off behind a departing or landing aircraft on an intersecting runway if flight paths will cross (see FIG 3-9-7 and FIG 3-9-8), or an aircraft departing a parallel runway separated by 2,500 feet or more if projected flights will cross (see FIG 3-9-9):

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

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

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

(c) Small behind B757 – *2 minutes.*

FIG 3–9–7
Departure Behind Departure on Intersecting Runway

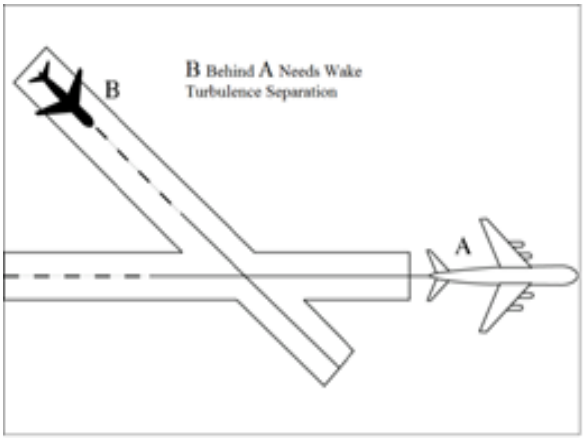


FIG 3–9–8
Departure Behind Arrival on Intersecting Runway

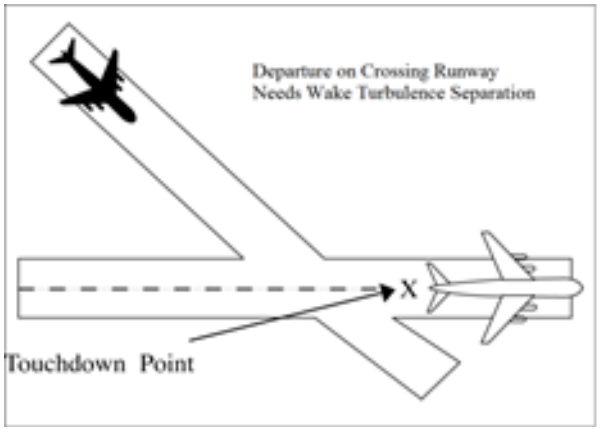
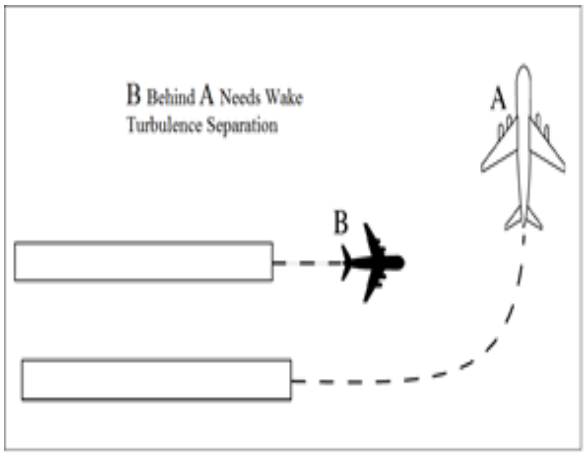


FIG 3–9–9
Parallel Runway



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

REFERENCE–
FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

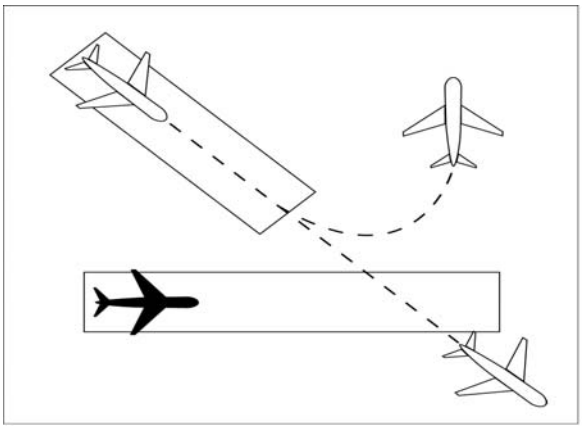
3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

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

REFERENCE–
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.

1. The preceding aircraft has departed and crossed the departure runway, or is turning to avert any conflict. (See FIG 3–9–10).

FIG 3–9–10
Intersecting Runway Separation



2. A preceding arriving aircraft has completed the landing roll and will hold short of the projected intersection, passed the projected intersection, or has crossed over the departure runway (See FIG 3–9–11 and FIG 3-9-12).

FIG 3–9–11
Intersecting Runway Separation

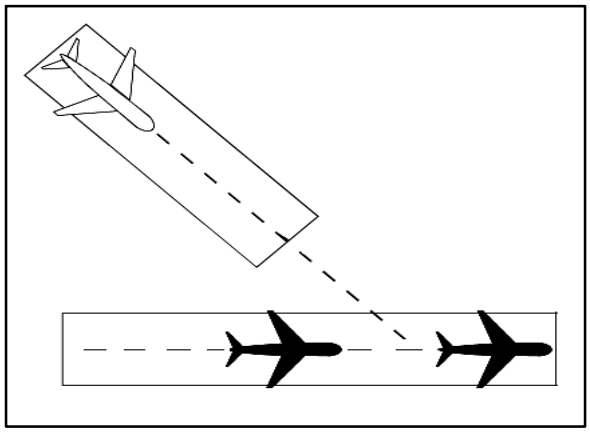
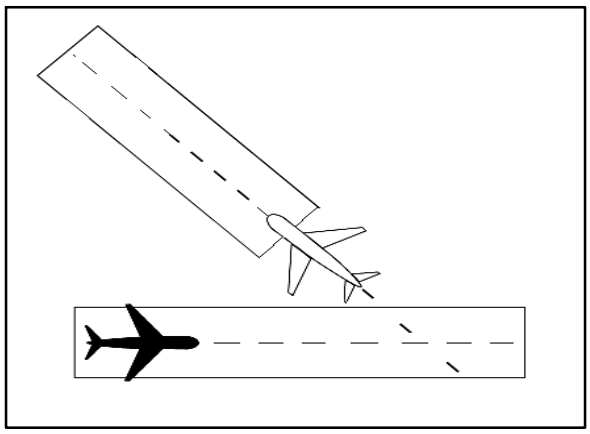


FIG 3–9–12
Intersecting Runway Separation



b. If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance of 1NM or less from either departure end, apply the provisions of Paragraph 3–9–8, Intersecting Runway Separation, unless: The facility is using aids specified in a facility directive, (may include but are not limited to, Arrival/Departure Window (ADW), ASDE–X Virtual Runway Intersection Point (VRIP), cut–off points or automation). (See FIG 3–9–15 and FIG 3–9–16).

REFERENCE–
FAAO JO 7210.3, Para 10-3-14, Go-Around/Missed Approach

WAKE TURBULENCE APPLICATION

FIG 3–9–13
Intersecting Runway Separation

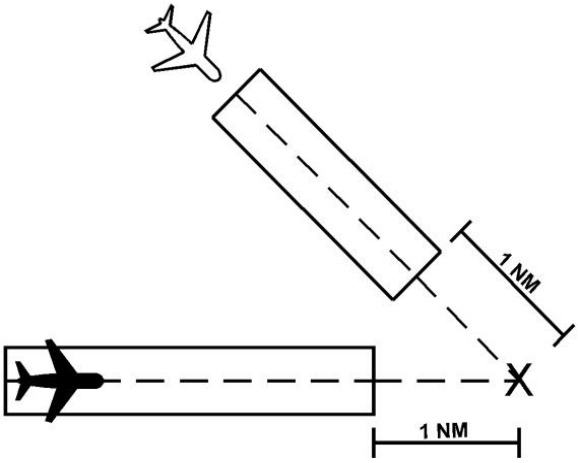
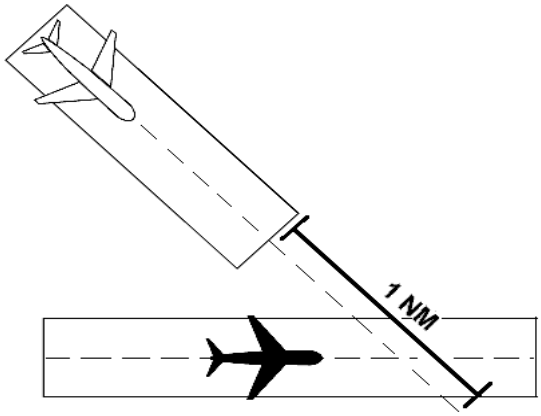


FIG 3–9–14
Intersecting Runway Separation



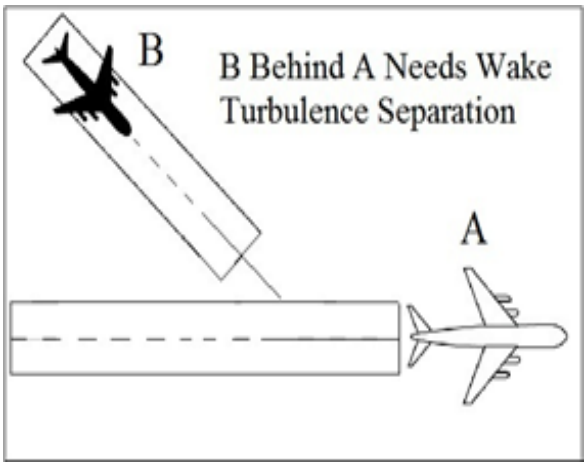
c. Separate IFR/VFR aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–15):

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

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

3. Small behind B757 – *2 minutes.*

FIG 3–9–15
Intersecting Runway Separation



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

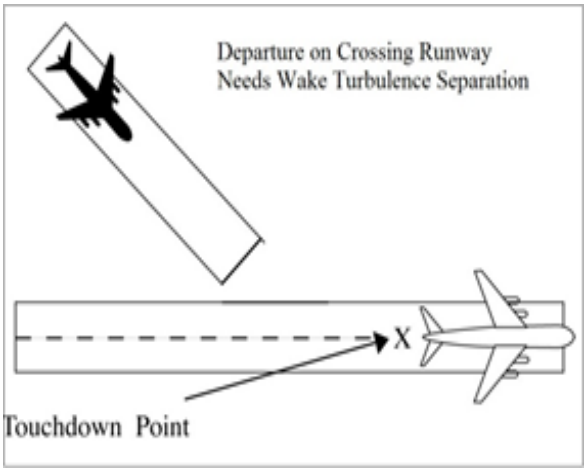
d. Separate IFR/VFR aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3–9–16):

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

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

3. Small behind B757 – *2 minutes.*

FIG 3–9–16
Intersecting Runway Separation



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

FIG 3–10–4
Same Runway Separation

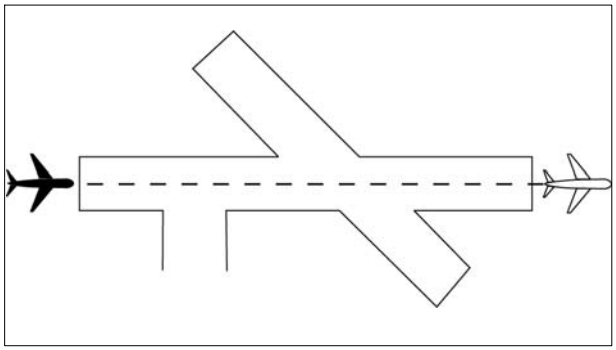
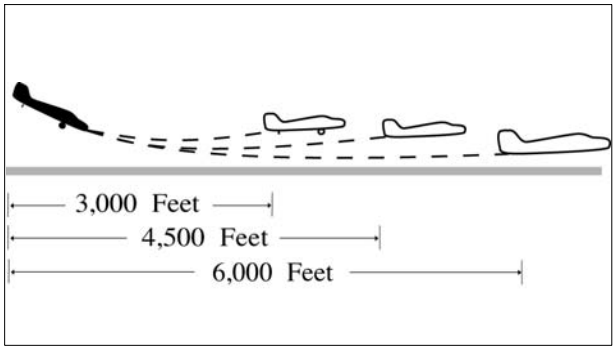


FIG 3–10–5
Same Runway Separation



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

WAKE TURBULENCE APPLICATION

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

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

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

REFERENCE–
AC 90–23, Aircraft Wake Turbulence, Para 12, Pilot Responsibility.
FAAO 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, Boeing 737 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 SEPARATION

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–
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.

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

FIG 3–10–6
Intersecting Runway Separation

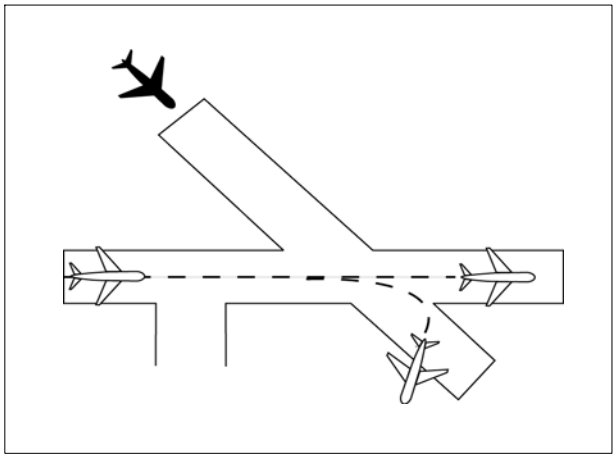
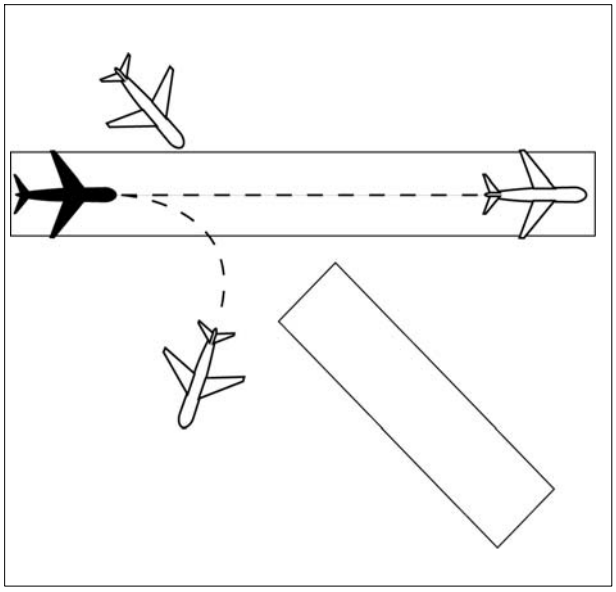


FIG 3–10–7
Intersecting Runway Separation



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

FIG 3–10–8
Intersection Runway Separation

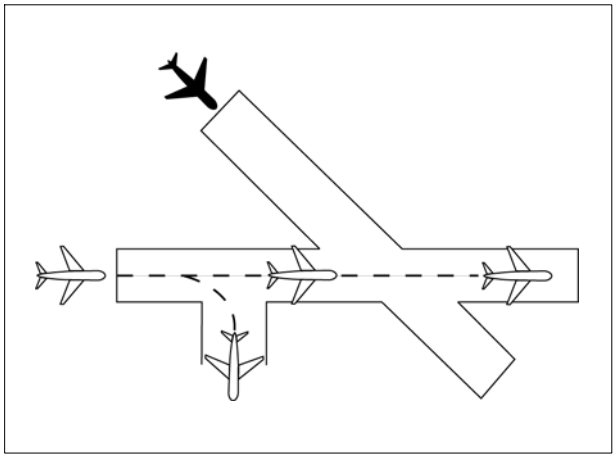
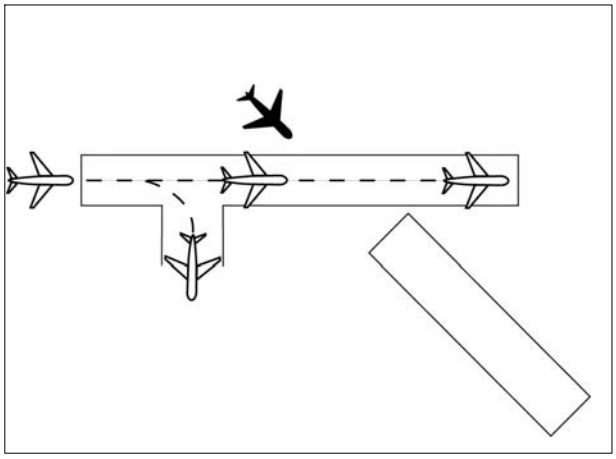


FIG 3–10–9
Intersection Runway Separation



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

REFERENCE–
FAAO JO 7110.65, Para 7–2–1, Visual Separation, subpara a2.

b. "USA/USAF/USN NOT APPLICABLE." An aircraft may be authorized to takeoff from one runway while another aircraft lands simultaneously on an intersecting runway or an aircraft lands on one runway while another aircraft lands simultaneously on an intersecting runway, or an aircraft lands to hold short of an intersecting taxiway or some other predetermined point such as an approach/departure flight path using procedures specified in the current LAHSO directive. The procedure must be approved by the air traffic manager and be in accordance with a facility directive. The following conditions apply:

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

REFERENCE–
FAAO JO 7210.3, Para 10–3–7, Land and Hold Short Operations (LAHSO).

1. A simultaneous takeoff and landing operation must only be conducted in VFR conditions.

2. Instruct the landing aircraft to hold short of the intersecting runway being used by the aircraft taking off. In the case of simultaneous landings and no operational benefit is lost, restrict the aircraft of the lesser weight category (if known). LAHSO clearances must only be issued to aircraft that are

Section 3. Departure Procedures

4–3–1. DEPARTURE TERMINOLOGY

Avoid using the term "takeoff" except to actually clear an aircraft for takeoff or to cancel a takeoff clearance. Use such terms as "depart," "departure," or "fly" in clearances when necessary.

REFERENCE–
FAAO JO 7110.65, Para 3–9–9, Takeoff Clearance.
FAAO JO 7110.65, Para 3–9–11, Cancellation of Takeoff Clearance.

4–3–2. DEPARTURE CLEARANCES

Include the following items in IFR departure clearances:

NOTE–
When considered necessary, controllers or pilots may initiate read backs of a clearance. Some pilots may be required by company rule to do so.

a. Always include the airport of departure when issuing a departure clearance for relay to an aircraft by an FSS, dispatcher, etc.

b. Clearance Limit.

1. Specify the destination airport when practicable, even though it is outside controlled airspace. Issue short range clearances as provided for in any procedures established for their use.

(a) When the clearance limit is an airport, the word "airport" must follow the airport name.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

(b) When the clearance limit is a NAVAID and the NAVAID type is known, the type of NAVAID must follow the NAVAID name.

PHRASEOLOGY–
CLEARED TO (NAVAID name and type)

(c) When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

PHRASEOLOGY–
CLEARED TO (intersection or waypoint name and type)

2. For Air Force One (AF1) operations, do not specify the destination airport.

NOTE–
Presidential detail is responsible for ensuring the accuracy of the destination airport.

PHRASEOLOGY–
DESTINATION AS FILED.

c. Departure Procedures.

1. Specify direction of takeoff/turn or initial heading to be flown after takeoff as follows:

(a) Locations with Airport Traffic Control Service–Specify direction of takeoff/turn or initial heading as necessary, consistent with published departure procedures (DP) or diverse vector areas (DVA), where applicable.

NOTE–
If an initial heading is assigned in lieu of an assigned/filed Pilot Nav SID, and an ODP is published for that runway, pilots may commence turn after reaching a safe altitude or they may complete the ODP instructions for obstacle clearance, based on the regulations they are operating under before turning to the assigned heading.

(b) Locations without Airport Traffic Control Service, but within a Class E surface area – specify direction of takeoff/turn or initial heading if necessary. Obtain/solicit the pilot's concurrence concerning a turn or heading before issuing them in a clearance.

NOTE–
Direction of takeoff and turn after takeoff can be obtained/solicited directly from the pilot, or relayed by an FSS, dispatcher, etc., as obtained/solicited from the pilot.

(c) At all other airports– Do not specify direction of takeoff/turn after takeoff. If necessary to specify an initial heading to be flown after takeoff, issue the initial heading so as to apply only within controlled airspace.

2. Where an obstacle departure procedure (ODP) has been published for a location and pilot compliance is necessary to ensure separation, include the procedure as part of the ATC clearance.

EXAMPLE–
"Depart via the (airport name)(runway number) departure procedure."
Or
"Depart via the (graphic ODP name) obstacle departure procedure."

NOTE–
Some aircraft are required by 14 CFR 91.175 to depart a runway under IFR using the ODP absent other instructions from ATC.

NOTE–
IFR takeoff minimums and obstacle departure procedures are prescribed for specific airports/runways and published in either a textual, or graphic form with the label (OBSTACLE) in the procedure title, and documented on an appropriate FAA Form 8260. To alert pilots of their existence, instrument approach procedure charts are annotated with a symbol:

3. Do not solicit use of the Visual Climb over Airport (VCOA) option.

NOTE–
Pilots will specifically advise ATC of their intent to use the VCOA option.

4. Compatibility with a procedure issued may be verified by asking the pilot if items obtained/solicited will allow him/her to comply with local traffic pattern, terrain, or obstruction avoidance.

PHRASEOLOGY–
FLY RUNWAY HEADING.

DEPART (direction or runway).

TURN LEFT/RIGHT.

WHEN ENTERING CONTROLLED AIRSPACE (instruction), FLY HEADING (degrees) UNTIL REACHING (altitude, point, or fix) BEFORE PROCEEDING ON COURSE.

FLY A (degree) BEARING/AZIMUTH FROM/TO (fix) UNTIL (time),

or

UNTIL REACHING (fix or altitude),

and if required,

BEFORE PROCEEDING ON COURSE.

EXAMPLE–
"Verify right turn after departure will allow compliance with local traffic pattern,"or "Verify this clearance will allow compliance with terrain or obstruction avoidance."

NOTE–
If a published IFR departure procedure is not included in an ATC clearance, compliance with such a procedure is the pilot's prerogative.

5. SIDs:

(a) Assign a SID (including transition if necessary). Assign a PDR or the route filed by the pilot, only when a SID is not established for the departure route to be flown, or the pilot has indicated that he/she does not wish to use a SID.

NOTE–
Departure procedure descriptive text contained within parentheses (for example, "Jimmy One (RNAV) Departure") is not included in departure clearance phraseology.

PHRASEOLOGY–
(SID name and number) DEPARTURE.

(SID name and number) DEPARTURE,
(transition name) TRANSITION.

EXAMPLE–
"Stroudsburg One Departure."
"Stroudsburg One Departure, Sparta Transition."

NOTE–
If a pilot does not wish to use a SID issued in an ATC clearance, or any other SID published for that location, he/she is expected to advise ATC.

(b) If it is necessary to assign a crossing altitude which differs from the SID altitude emphasize the change to the pilot.

PHRASEOLOGY–
(SID name and number) DEPARTURE, EXCEPT CROSS (revised altitude information).

EXAMPLE–
"Stroudsburg One Departure, except cross Quaker at five thousand."

"Astoria Two Departure, except cross Astor waypoint at six thousand."

(c) Specify altitudes when they are not included in the SID.

PHRASEOLOGY–
(SID name and number) DEPARTURE. CROSS (fix) AT (altitude).

EXAMPLE–
"Stroudsburg One Departure. Cross Jersey intersection at four thousand. Cross Range intersection at six thousand."

"Engle Two departure. Cross Pilim waypoint at or above five thousand. Cross Engle waypoint at or above seven thousand. Cross Gorge waypoint at niner thousand."

d. Route of flight. Specify one or more of the following:

1. Airway, route, course, heading, azimuth, arc, or vector.

2. The routing a pilot can expect if any part of the route beyond a short range clearance limit differs from that filed.

PHRASEOLOGY–
EXPECT FURTHER CLEARANCE VIA (airways, routes, or fixes.)

e. Altitude. Use one of the following in the order of preference listed. Altitude may be omitted if the top altitude is published in the SID route description.

NOTE–
Turbojet aircraft equipped with afterburner engines may occasionally be expected to use afterburning during their climb to the en route altitude. When so advised by the pilot, the controller may be able to plan his/her traffic to accommodate the high performance climb and allow the pilot to climb to his/her planned altitude without restriction.

REFERENCE–
PCG, Climb Via, Top Altitude

1. To the maximum extent possible, Air Force One will be cleared unrestricted climb to:

(a) 9,000' AGL or higher.

(b) If unable 9,000' AGL or higher, then the highest available altitude below 9,000' AGL.

2. Assign the altitude requested by the pilot.

3. Assign an altitude, as near as possible to the altitude requested by the pilot, and

(a) Inform the pilot when to expect clearance to the requested altitude unless instructions are contained in the specified SID, or

(b) If the requested altitude is not expected to be available, inform the pilot what altitude can be expected and when/where to expect it.

NOTE–
1. *14 CFR Section 91.185, says that in the event of a two-way radio communication failure, in VFR conditions or if VFR conditions are encountered after the failure, the pilot must continue the flight under VFR and land as soon as practicable. That section also says that when the failure occurs in IFR conditions the pilot must continue flight at the highest of the following altitudes or flight levels for the route segment being flown:*

a. *The altitude or flight level assigned in the last ATC clearance received.*

b. *The minimum altitude (converted, if appropriate, to minimum flight level as prescribed in 14 CFR Section 91.121(c)) for IFR operations. (This altitude should be consistent with MEAs, MOCAs, etc.)*

c. *The altitude or flight level ATC has advised may be expected in a further clearance.*

2. *If the expected altitude is the highest of the preceding choices, the pilot should begin to climb to that expected altitude at the time or fix specified in the clearance. The choice to climb to the expected altitude is not applicable if the pilot has proceeded beyond the specified fix or if the time designated in the clearance has expired.*

PHRASEOLOGY–
CLIMB AND MAINTAIN (the altitude as near as possible to the pilot's requested altitude). EXPECT (the requested altitude or an altitude different from the requested altitude) AT (time or fix),

and if applicable,

(pilot's requested altitude) IS NOT AVAILABLE.

EXAMPLE–
1. *A pilot has requested flight level 350. Flight level 230 is immediately available and flight level 350 will be available at the Appleton zero five zero radial 35 mile fix. The clearance will read:*
"Climb and maintain flight level two three zero. Expect flight level three five zero at Appleton zero five zero radial three five mile fix."

2. *A pilot has requested 9,000 feet. An altitude restriction is required because of facility procedures or requirements. Assign the altitude and advise the pilot at what fix/time the pilot may expect the requested altitude. The clearance could read:*
"Climb and maintain five thousand. Expect niner thousand one zero minutes after departure."

3. *A pilot has requested 17,000 feet which is unavailable. You plan 15,000 feet to be the pilot's highest altitude prior to descent to the pilot's destination but only 13,000 feet is available until San Jose VOR. Advise the pilot of the expected altitude change and at what fix/time to expect clearance to 15,000 feet. The clearance will read: "Climb and maintain one three thousand. Expect one five thousand at San Jose. One seven thousand is not available."*

REFERENCE–
FAAO JO 7110.65, Para 4–3–3, Abbreviated Departure Clearance.
FAAO JO 7110.65, Para 5–8–2, Initial Heading.

4. Use one of the following when the SID contains published crossing restrictions:

(a) When the top altitude is included in the SID route description, instruct aircraft to "climb via SID."

(b) When a top altitude is not published on a SID that contains published crossing restrictions, or when it is necessary to issue an interim altitude

instruct the aircraft to "Climb via SID except (altitude assignment/ change)".

EXAMPLE–
"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five. Climb via SID."

"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb via SID except maintain flight level one eight zero."

"Cleared to Johnston Airport, Scott One departure, Jonez transition, Q-One Forty-five, Climb Via SID except maintain flight level one eight zero, expect flight level three five zero one zero minutes after departure."

NOTE–
Considering the principle that the last ATC clearance issued has precedence over the previous, the phraseology 'maintain (altitude)' alone cancels previously issued altitude restrictions, including SID/STAR altitude restrictions, unless they are restated or modified.

REFERENCE–
FAA JO7110.65 Para 4-2-5 Route or Altitude Amendments
AIM 4-4-10 Adherence to Clearance

4–3–3. ABBREVIATED DEPARTURE CLEARANCE

a. Issue an abbreviated departure clearance if its use reduces verbiage and the following conditions are met:

REFERENCE–
FAAO JO 7110.65, Para 4–2–8, IFR-VFR and VFR-IFR Flights.

1. The route of flight filed with ATC has not been changed by the pilot, company, operations officer, input operator, or in the stored flight plan program prior to departure.

NOTE–
A pilot will not accept an abbreviated clearance if the route of flight filed with ATC has been changed by him/her or the company or the operations officer before departure. He/she is expected to inform the control facility on initial radio contact if he/she cannot accept the clearance. It is the responsibility of the company or operations officer to inform the pilot when they make a change.

2. All ATC facilities concerned have sufficient route of flight information to exercise their control responsibilities.

NOTE–
The route of flight information to be provided may be covered in letters of agreement.

3. When the flight will depart IFR, destination airport information is relayed between the facilities concerned prior to departure.

EXAMPLE–
1. *A tower or flight service station relay of destination airport information to the center when requesting clearance:*
"Request clearance for United Four Sixty-One to O'Hare."

2. *A center relay to the tower or flight service station when initiating a clearance:*
"Clearance for United Four Sixty-One to O'Hare."

NOTE–
Pilots are expected to furnish the facility concerned with destination airport information on initial radio call-up. This will provide the information necessary for detecting any destination airport differences on facility relay.

4. The assigned altitude, according to the provisions in para 4–3–2, Departure Clearances, subparagraph e, is stated in the clearance. Where a top altitude is published in the SID route description it may be omitted.

b. If it is necessary to modify a filed route of flight in order to achieve computer acceptance due, for example, to incorrect fix or airway identification, the contraction "FRC," meaning "Full Route Clearance Necessary," or "FRC/(fix)," will be added to the remarks. "FRC" or "FRC/(fix)" must always be the first item of intra-center remarks. When "FRC" or "FRC/(fix)" appears on a flight progress strip, the controller issuing the ATC clearance to the aircraft must issue a full route clearance to the specified fix, or, if no fix is specified, for the entire route.

EXAMPLE–
"Cleared to Missoula International Airport, Chief Two Departure to Angley; direct Salina; then as filed; maintain one seven thousand."

NOTE–
Changes, such as those made to conform with traffic flows and preferred routings, are only permitted to be made by the pilot (or his/her operations office) or the controller responsible for initiating the clearance to the aircraft.

c. Specify the destination airport in the clearance.

d. When no changes are required in the filed route, state the phrase: "Cleared to (destination) airport, ([SID name and number] and SID transition, as

appropriate); then, as filed." If a SID is not assigned, follow with "As filed."

1. Specify the assigned altitude. The altitude may be omitted and pilots instructed to "climb via SID" when a top altitude is published in the SID route description.

2. When the SID has published altitude restrictions but the top altitude is not published or must be changed, state the phrase "climb via SID except maintain" to assign the top altitude. If required, add any additional instructions or information, including final requested altitude if different than assigned except if Pre−Departure Clearance (PDC) is utilized.

PHRASEOLOGY−
CLEARED TO (destination) AIRPORT;

and as appropriate,

(SID name and number) DEPARTURE,
THEN AS FILED.

MAINTAIN (altitude); (additional instructions or information).

Or as appropriate,

CLIMB VIA SID.

CLIMB VIA SID except maintain (altitude); (additional instructions or information).

If a SID is not assigned,

CLEARED TO (destination) AIRPORT AS FILED.
MAINTAIN (altitude);

and if required,

(additional instructions or information).

EXAMPLE−
"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."

"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID."

"Cleared to Reynolds Airport; David Two Departure, Kingham Transition; then, as filed. Climb via SID except maintain flight level two four zero. Expect flight level four one zero, one zero minutes after departure.

"Cleared to Reynolds Airport as filed. Maintain niner thousand. Expect flight level four one zero, one zero minutes after departure."

NOTE−
1. *SIDs are excluded from "cleared as filed" procedures.*

2. *If a pilot does not wish to accept an ATC clearance to fly a SID, he/she is expected to advise ATC or state "NO SID" in his/her flight plan remarks.*

REFERENCE−
PCG, Climb Via, Top Altitude

e. When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must either:

1. Issue a FRC/FRC until a fix; or

2. If it reduces verbiage, state the phrase: "Cleared to (destination) airport, or cleared NAVAID, intersection, or waypoint (type if known), (SID name and number and SID transition, as appropriate), then as filed, except ..." Specify the necessary revision.

3. Specify the assigned altitude. The altitude may be omitted and pilots instructed to "climb via SID" when a top altitude is published in the SID route description.

4. When the SID has published altitude restrictions but the top altitude is not published or must be changed state the phrase "climb via SID except maintain" and the assign the top altitude. If required, add any additional instructions or information.

5. If a SID is not assigned, state: "Cleared to (destination) airport or cleared to NAVAID, intersection, or waypoint (type if known) as filed, except ..." Specify the necessary revision, the assigned altitude; and if required, add any additional instructions or information.

PHRASEOLOGY−
CLEARED TO (destination) AIRPORT.

Or

CLEARED TO (NAVAID name and type).

Or

CLEARED TO (intersection or waypoint name and type).

and as appropriate,

(SID name and number) DEPARTURE,

(transition name) TRANSITION; THEN,

AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion).

MAINTAIN (altitude);

Or as appropriate,

CLIMB VIA SID

CLIMB VIA SID except maintain (altitude); (additional instructions or information);

and if required,

(additional instructions or information).

If a SID is not assigned,

CLEARED TO (destination) AIRPORT AS FILED,

EXCEPT CHANGE ROUTE TO READ (amended route portion).

MAINTAIN (altitude);

and if required,

(additional instructions or information).

EXAMPLE–
"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."

"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID."

"Cleared to Reynolds Airport; South Boston One Departure; then, as filed, except change route to read South Boston Victor Twenty Greensboro; climb via SID except maintain flight level one eight zero, expect flight level three one zero one zero minutes after departure."

"Cleared to Reynolds Airport as filed, except change route to read South Boston Victor Twenty Greensboro. Maintain eight thousand, report leaving four thousand."

"Cleared to Reynolds Airport via Victor Ninety-one Albany, then as filed. Maintain six thousand."

f. In a nonradar environment specify one, two, or more fixes, as necessary, to identify the initial route of flight.

1. Specify the destination airport, when practicable, followed by the word "airport" even though it is outside controlled airspace.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

2. When the clearance limit is a NAVAID, the type of NAVAID must follow the NAVAID name.

PHRASEOLOGY–
CLEARED TO (NAVAID name and type)

3. When the clearance limit is an intersection or waypoint and the type is known, the type must follow the intersection or waypoint name.

PHRASEOLOGY–
CLEARED TO (intersection or waypoint name and type)

EXAMPLE–
The filed route of flight is from Hutchins V10 Emporia, thence V10N and V77 to St. Joseph. The clearance will read:
"Cleared to Watson Airport as filed via Emporia, maintain Seven Thousand."

g. Do not apply these procedures when a pilot requests a detailed clearance or to military operations conducted within ALTRV, stereo routes, operations above FL 600, and other military operations requiring special handling.

NOTE–
Departure clearance procedures and phraseology for military operations within approved altitude reservations, military operations above FL 600, and other military operations requiring special handling are contained in separate procedures in this order or in a LOA, as appropriate.

REFERENCE–
FAAO JO 7110.65, Para 4–2–7, ALTRV Clearance.
FAAO JO 7110.65, Para 9–2–14, Military Operations Above FL 600.

4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES

Assign departure restrictions, clearance void times, hold for release, or release times when necessary to separate departures from other traffic or to restrict or regulate the departure flow.

REFERENCE–
FAAO JO 7110.65, Para 10–3–1, Overdue Aircraft.
FAAO JO 7110.65, Para 10–4–1, Traffic Restrictions.
FAAO JO 7110.65, Para 10–4–3, Traffic Resumption.

a. Clearance Void Times.

1. When issuing clearance void times at airports not served by control towers, provide alternative instructions requiring the pilots to advise ATC of their intentions no later than 30 minutes after the clearance void time if not airborne.

2. The facility delivering a clearance void time to a pilot must issue a time check. A void time issued using a specified number of minutes does not require a time check.

PHRASEOLOGY–
CLEARANCE VOID IF NOT OFF BY (clearance void time),

and if required,

IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and the nearest quarter minute).

or

CLEARANCE VOID IF NOT OFF IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

b. Hold For Release (HFR).

1. "Hold for release" instructions must be used when necessary to inform a pilot or a controller that a departure clearance is not valid until additional instructions are received.

REFERENCE–
P/CG Term– Hold for Release.

2. When issuing hold for release instructions, include departure delay information.

PHRASEOLOGY–
(Aircraft identification) CLEARED TO (destination) AIRPORT AS FILED, MAINTAIN (altitude),

and if required,

(additional instructions or information).

HOLD FOR RELEASE, EXPECT (time in hours and/or minutes) DEPARTURE DELAY.

3. When conditions allow, release the aircraft as soon as possible.

PHRASEOLOGY–
To another controller,

(aircraft identification) RELEASED.

To a flight service specialist,

ADVISE (aircraft identification) RELEASED FOR DEPARTURE.

To a pilot at an airport not served by a control tower,

(aircraft identification) RELEASED FOR DEPARTURE.

c. Release Times.

1. Release times must be issued to pilots when necessary to specify the earliest time an aircraft may depart.

NOTE–
A release time is a departure restriction issued to a pilot (either directly or through authorized relay) to separate a departing aircraft from other traffic.

2. The facility issuing a release time to a pilot must issue a time check. A release time using a specified number of minutes does not require a time check.

PHRASEOLOGY–
(Aircraft identification) RELEASED FOR DEPARTURE AT (time in hours and/or minutes),

and if required,

IF NOT OFF BY (time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and nearest quarter minute).

(Aircraft identification) RELEASED FOR DEPARTURE IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

d. When expect departure clearance times (EDCT) are assigned through traffic management

programs, excluding overriding call for release (CFR) operations as described in subparagraph e, the departure terminal must, to the extent possible, plan ground movement of aircraft destined to the affected airport(s) so that flights are sequenced to depart no earlier than 5 minutes before, and no later than 5 minutes after the EDCT. Do not release aircraft on their assigned EDCT if a ground stop (GS) applicable to that aircraft is in effect, unless approval has been received from the originator of the GS.

e. Call for Release (CFR). When CFR is in effect, release aircraft so they are airborne within a window that extends from 2 minutes prior and ends 1 minute after the assigned time, unless otherwise coordinated.

NOTE–
1. *Subparagraph (e) applies to all facilities.*

2. *Coordination may be verbal, electronic, or written.*

1. If an aircraft has begun to taxi or requests taxi in a manner consistent with meeting the EDCT, the aircraft must be released. Additional coordination is not required.

2. If an aircraft requests taxi or clearance for departure inconsistent with meeting the EDCT window, ask the pilot to verify the EDCT.

(a) If the pilot's EDCT is the same as the FAA EDCT, the aircraft is released consistent with the EDCT.

(b) If the pilot's EDCT is not the same as the FAA EDCT, refer to Trust and Verify Note below.

3. If an aircraft requests taxi too late to meet the EDCT, contact the ATCSCC through the appropriate TMU.

NOTE–
(Trust & Verify) EDCTs are revised by Air Carriers and Traffic Management for changing conditions en route or at affected airport(s). Terminal controllers' use of aircraft reported EDCT for departure sequencing should be verified with the appropriate TMU prior to departure if this can be accomplished without the aircraft incurring delay beyond the EDCT reported by the aircraft. The preferred method for verification is the Flight Schedule Monitor (FSM). If the EDCT cannot be verified without incurring additional delay, the aircraft should be released based on the pilot reported EDCT. The aircraft operator is responsible for operating in a manner consistent to meet the EDCT.

4–3–5. GROUND STOP

Do not release an aircraft if a ground stop (GS) applicable to that aircraft is in effect, without the approval of the originator of the GS.

4–3–6. DELAY SEQUENCING

When aircraft elect to take delay on the ground before departure, issue departure clearances to them in the order in which the requests for clearance were originally made if practicable.

4–3–7. FORWARD DEPARTURE DELAY INFORMATION

Inform approach control facilities and/or towers of anticipated departure delays.

4–3–8. COORDINATION WITH RECEIVING FACILITY

a. Coordinate with the receiving facility before the departure of an aircraft if the departure point is less than 15 minutes flying time from the transferring facility's boundary unless an automatic transfer of data between automated systems will occur, in which case, the flying time requirement may be reduced to 5 minutes or replaced with a mileage from the boundary parameter when mutually agreeable to both facilities.

NOTE–
Agreements requiring additional time are encouraged between facilities that need earlier coordination. However, when agreements establish mandatory radar handoff procedures, coordination needs only be effected in a timely manner prior to transfer of control.

REFERENCE–
FAAO JO 7110.65, Chapter 5, Section 4, Transfer of Radar Identification, Para 5–4–1, Application.

b. The actual departure time or a subsequent strip posting time must be forwarded to the receiving facility unless assumed departure times are agreed upon and that time is within 3 minutes of the actual departure time.

4–3–9. VFR RELEASE OF IFR DEPARTURE

When an aircraft which has filed an IFR flight plan requests a VFR departure through a terminal facility, FSS, or air/ground communications station:

a. After obtaining, if necessary, approval from the facility/sector responsible for issuing the IFR

clearance, you may authorize an IFR flight planned aircraft to depart VFR. Inform the pilot of the proper frequency and, if appropriate, where or when to contact the facility responsible for issuing the clearance.

PHRASEOLOGY–
VFR DEPARTURE AUTHORIZED. CONTACT (facility) ON (frequency) AT (location or time if required) FOR CLEARANCE.

b. If the facility/sector responsible for issuing the clearance is unable to issue a clearance, inform the pilot, and suggest that the delay be taken on the ground. If the pilot insists upon taking off VFR and obtaining an IFR clearance in the air, inform the facility/sector holding the flight plan of the pilot's intentions and, if possible, the VFR departure time.

4–3–10. FORWARDING DEPARTURE TIMES

TERMINAL

Unless alternate procedures are prescribed in a letter of agreement or automatic departure messages are being transmitted between automated facilities, forward departure times to the facility from which you received the clearance and also to the terminal departure controller when that position is involved in the departure sequence.

NOTE–
1. *Letters of agreement prescribing assumed departure times or mandatory radar handoff procedures are alternatives for providing equivalent procedures.*

2. *The letters "DM" flashing in the data block signify unsuccessful transmission of a departure message.*

REFERENCE–
FAAO JO 7210.3, Para 11–2–6, Automatic Acquisition/Termination Areas.

4–6–4. HOLDING INSTRUCTIONS

When issuing holding instructions, specify:

a. Direction of holding from the fix/waypoint.

b. Holding fix or waypoint.

NOTE–
The holding fix may be omitted if included at the beginning of the transmission as the clearance limit.

c. Radial, course, bearing, track, azimuth, airway, or route on which the aircraft is to hold.

d. Leg length in miles if DME or RNAV is to be used. Specify leg length in minutes if the pilot requests it or you consider it necessary.

e. Direction of holding pattern turns only if left turns are to be made, the pilot requests it, or you consider it necessary.

PHRASEOLOGY–
HOLD (direction) OF (fix/waypoint) ON (specified radial, course, bearing, track, airway, azimuth(s), or route.)

If leg length is specified,

(number of minutes/miles) MINUTE/MILE LEG.

If direction of turn is specified,

LEFT/RIGHT TURNS.

f. Issue maximum holding airspeed advisories when an aircraft is:

1. Approved to exceed the maximum airspeed of a pattern, and is cleared into a holding pattern that will protect for the greater speed; or

2. Observed deviating from the holding pattern airspace area; or

3. Cleared into an airspeed restricted holding pattern in which the icon has not been published.

EXAMPLE–
Due to turbulence, a turboprop requests to exceed the recommended maximum holding airspeed. ATCS may clear the aircraft into a pattern that protects for the airspeed request, and must advise the pilot of the maximum holding airspeed for the holding pattern airspace area.

PHRASEOLOGY–
"MAXIMUM HOLDING AIRSPEED IS TWO ONE ZERO KNOTS."

4–6–5. VISUAL HOLDING POINTS

You may use as a holding fix a location which the pilot can determine by visual reference to the surface if he/she is familiar with it.

PHRASEOLOGY–
HOLD AT (location) UNTIL (time or other condition.)

REFERENCE–
FAAO JO 7110.65, Para 7–1–4, Visual Holding of VFR Aircraft.

4–6–6. HOLDING FLIGHT PATH DEVIATION

Approve a pilot's request to deviate from the prescribed holding flight path if obstacles and traffic conditions permit.

4–6–7. UNMONITORED NAVAIDs

Separate an aircraft holding at an unmonitored NAVAID from any other aircraft occupying the course which the holding aircraft will follow if it does not receive signals from the NAVAID.

4–6–8. ILS PROTECTION/CRITICAL AREAS

When the official weather observation indicates a ceiling of less than ceiling 800 feet or visibility of 2 miles, do not authorize aircraft to hold below 5,000 feet AGL inbound toward the airport on or within 1 statute mile of the localizer between the ILS OM or the fix used in lieu of the OM and the airport. *USAF.* The holding restriction applies only when an arriving aircraft is between the ILS OM or the fix used in lieu of the OM and the runway.

REFERENCE–
FAAO 7130.3, Holding Pattern Criteria.

Section 8. Approach Clearance Procedures

4–8–1. APPROACH CLEARANCE

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

1. To require an aircraft to execute a particular instrument approach procedure, specify in the approach clearance the name of the approach as published on the approach chart. Where more than one procedure is published on a single chart and a specific procedure is to be flown, amend the approach clearance to specify execution of the specific approach to be flown. If only one instrument approach of a particular type is published, the approach needs not be identified by the runway reference.

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

3. Standard instrument approach procedures (SIAP) must begin at an initial approach fix (IAF) or an intermediate fix (IF) if there is not an IAF.

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

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

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

PHRASEOLOGY–
CLEARED (type) APPROACH.

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

CLEARED APPROACH.

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

CLEARED (specific procedure to be flown) APPROACH.

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

CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.
(When the title of the approach procedure contains "or LOC")

CLEARED LOCALIZER APPROACH

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

CANCEL APPROACH CLEARANCE (additional instructions as necessary)

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

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

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

authorized at night" or Snowflake icon with associated temperature.

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

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

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

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

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

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

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

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

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

11. *There are some systems, for example, Enhanced Flight Vision System (EFVS), which allow aircraft to descend below published final approach minimums.*

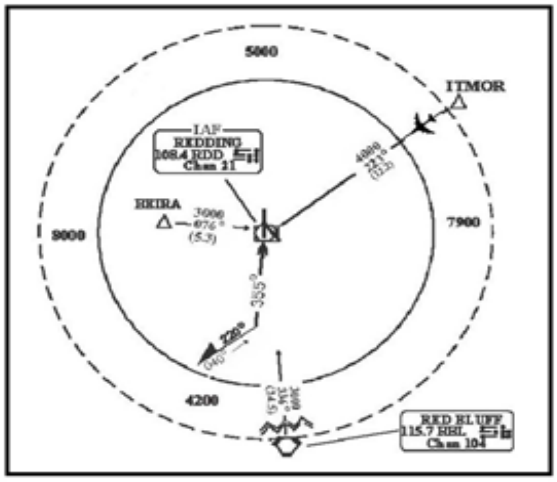
REFERENCE–
14 CFR § 91.175(l)
P/CG Term – EFVS

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

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

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

FIG 4–8–1
Approach Clearance Example



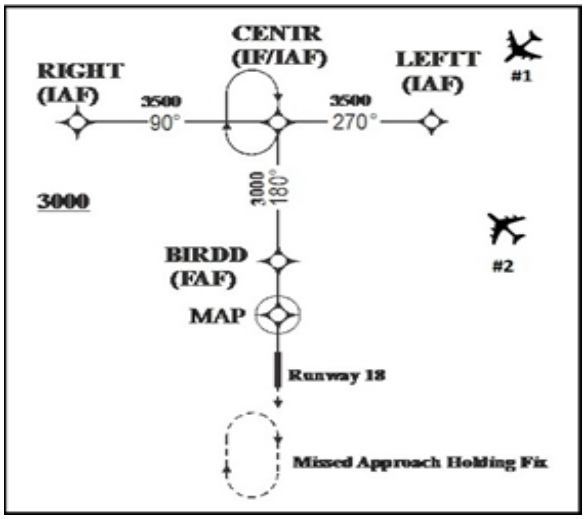
2. Assigned an altitude to maintain until the aircraft is established on a segment of a published route or instrument approach procedure. (See FIG 4-8-2.)

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

Runway One Eight Approach."

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

FIG 4–8–2
Approach Clearance Example



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

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

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

REFERENCE–
FAAO 8260.3 United States Standard for Terminal Instrument Procedures (TERPS), Para 10-2

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

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

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

PHRASEOLOGY–
CLEARED STRAIGHT-IN (type) APPROACH

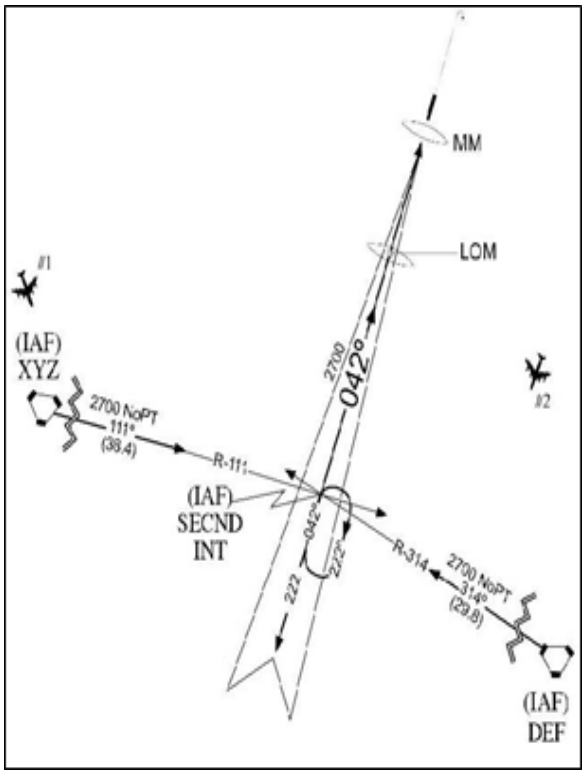
NOTE–
1. *Restate "cleared straight-in" in the approach clearance even if the pilot was advised earlier to expect a straight-in approach.*

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

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

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

FIG 4–8–3
Approach Clearance Example
For Aircraft On a Conventional Approach



EXAMPLE–
Aircraft 1 can be cleared direct to XYZ VORTAC, or SECND because the intercept angle is 90 degrees or less.

Aircraft 2 cannot be cleared to XYZ VORTAC because the intercept angle is greater than 90 degrees.

Aircraft 2 can be cleared to SECND if allowed to execute the hold-in-lieu of procedure turn pattern.

f. Except when applying radar procedures, timed or visual approaches, clear an aircraft for an approach to an airport when the preceding aircraft has landed or canceled IFR flight plan.

g. Where instrument approaches require radar monitoring and radar services are not available, do not use the phraseology "cleared approach," which allows the pilot his/her choice of instrument approaches.

RNAV APPLICATION

h. For RNAV–equipped aircraft operating on unpublished routes, issue approach clearance for conventional or RNAV SIAP including approaches with RF legs only after the aircraft is: (See FIG 4–8–4).

1. Established on a heading or course direct to the IAF at an intercept angle not greater than 90 degrees and is assigned an altitude in accordance with b2. Radar monitoring is required to the IAF for RNAV (RNP) approaches when no hold–in–lieu of procedure turn is executed.

EXAMPLE–
Aircraft 1 can be cleared direct to CENTR. The intercept angle at that IAF is 90 degrees or less. The minimum altitude for IFR operations (14 CFR, section 91.177) along the flight path to the IAF is 3,000 feet. If a hold in lieu of procedure turn pattern is depicted at an IAF and a TAA is not defined, the aircraft must be instructed to conduct a straight-in approach if ATC does not want the pilot to execute a hold-in-lieu procedure turn. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared straight-in RNAV Runway One-Eight Approach."

2. Established on a heading or course direct to the IF at an angle not greater than 90 degrees, provided the following conditions are met:

(a) Assign an altitude in accordance with b2 that will permit a normal descent to the FAF.

NOTE–
Controllers should expect aircraft to descend at approximately 150-300 feet per nautical mile when applying guidance in subpara d2(a).

(b) Radar monitoring is provided to the IF.

(c) The SIAP must identify the intermediate fix *with the letters "IF."*

(d) For procedures where an IAF is published, the pilot is advised to expect clearance to the IF at least 5 miles from the fix.

EXAMPLE–
"Expect direct CENTR for RNAV Runway One-Eight Approach."

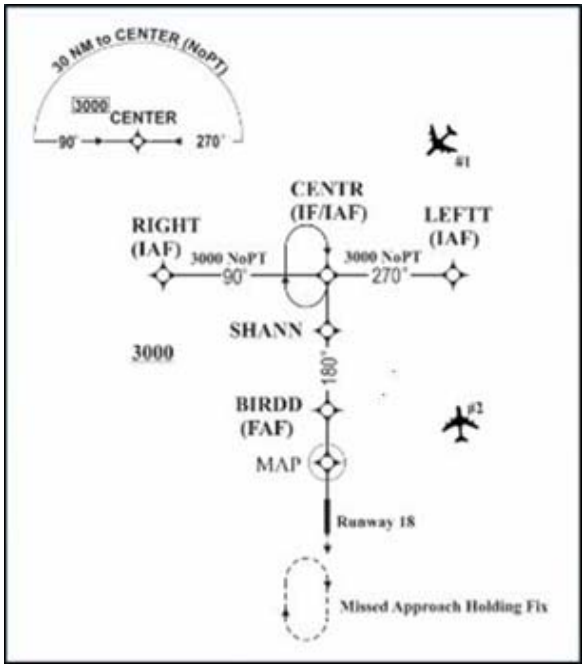
3. Established on a heading or course direct to a fix between the IF and FAF, at an intercept angle not greater than 30 degrees, and assigned an altitude in accordance with b2.

EXAMPLE–
Aircraft 1 is more than 5 miles from SHANN. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to SHANN is 3,000 feet. SHANN is a step down fix between the IF/IAF (CENTR) and the FAF. To clear Aircraft 1 to SHANN, ATC must ensure the intercept angle for the intermediate segment at SHANN is not greater than 30 degrees and must be cleared to an altitude

that will allow a normal descent to the FAF. "Cleared direct SHANN, cross SHANN at or above three thousand, cleared RNAV Runway One-Eight Approach."

REFERENCE–
FAAO 7110.65, Par 5-6-2, Methods
FAAO 7110.65, Chapter 5, Section 9, Radar Arrivals

FIG 4–8–4
Approach Clearance Example For RNAV Aircraft



EXAMPLE–
Aircraft 2 cannot be cleared direct to CENTR unless the aircraft is allowed to execute the hold-in-lieu of procedure turn. The intercept angle at that IF/IAF is greater than 90 degrees. The minimum altitude for IFR operations (14 CFR Section 91.177) along the flight path to the IAF is 3,000 feet. "Cleared direct CENTR, maintain at or above three thousand until CENTR, cleared RNAV Runway One-Eight approach." The pilot is expected to proceed direct CENTR and execute the hold-in-lieu of procedure turn.

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

REFERENCE–
FAAO JO 7110.65, Chapter 5, Section 9, Radar Arrivals

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

1. Via published transitions, or

2. In accordance with paragraph h.

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

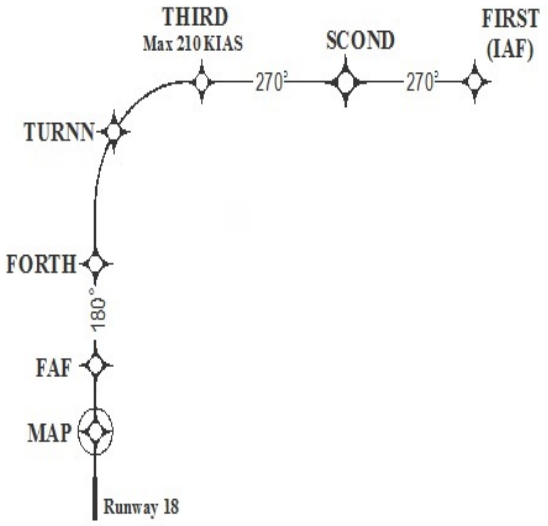
4. Do not assign fix/waypoint crossing speeds in excess of charted speed restrictions.

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

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

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

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



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

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

j. Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the

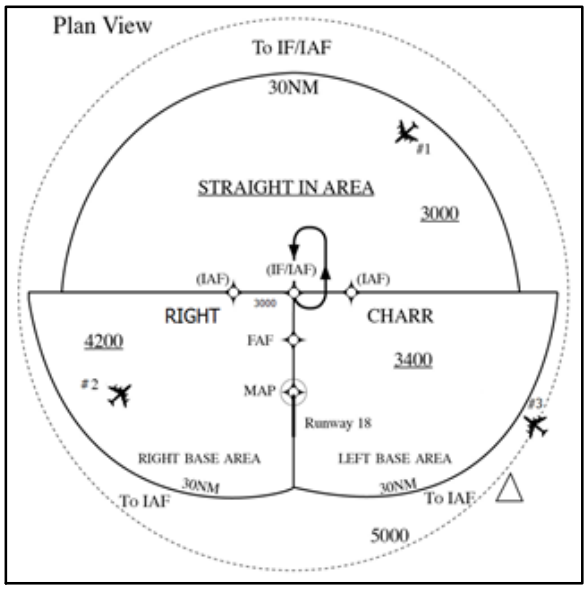
procedures under subparagraph b above. (See FIG 4–8–6.)

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

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

EXAMPLE–
Aircraft 1: The aircraft is at or above the minimum TAA altitude and within the lateral boundary of the TAA. "Cleared R–NAV Runway One Eight Approach."
Aircraft 2: The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. "Cross RIGHT at or above three thousand, cleared R–NAV Runway One Eight Approach."
Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR Section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One–Eight Approach."

FIG 4–8–6
Basic "T" and TAA Design



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

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

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

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

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

4–8–2. CLEARANCE LIMIT

Issue approach or other clearances, as required, specifying the destination airport as the clearance limit if airport traffic control service is not provided even though this is a repetition of the initial clearance.

PHRASEOLOGY–
CLEARED TO (destination) AIRPORT

4–8–3. RELAYED APPROACH CLEARANCE

TERMINAL

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

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

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

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

REFERENCE–
FAAO JO 7110.65, Para 4–7–5, Military Turbojet En Route Descent.

4–8–5. SPECIFYING ALTITUDE

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

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

4–8–6. CIRCLING APPROACH

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

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

PHRASEOLOGY–
CIRCLE TO RUNWAY (number),

or

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

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

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

4–8–7. SIDE–STEP MANEUVER

TERMINAL

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

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

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

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

4–8–8. COMMUNICATIONS RELEASE

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

PHRASEOLOGY–
CHANGE TO ADVISORY FREQUENCY APPROVED.

NOTE–
An expeditious frequency change permits the aircraft to receive timely local airport traffic information in accordance with AC 90–42, Traffic Advisory Practices at Airports Without Operating Control Towers.

4–8–9. MISSED APPROACH

Except in the case of a VFR aircraft practicing an instrument approach, an approach clearance automat-

ically authorizes the aircraft to execute the missed approach procedure depicted for the instrument approach being flown. An alternate missed approach procedure as published on the appropriate FAA Form 8260 or appropriate military form may be assigned when necessary. Once an aircraft commences a missed approach, it may be radar vectored.

NOTE–

1. *Alternate missed approach procedures are published on the appropriate FAA Form 8260 or appropriate military form and require a detailed clearance when they are issued to the pilot.*

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

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

REFERENCE–

FAAO JO 7110.65, Para 4–8–11, Practice Approaches.
FAAO JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.
FAAO JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.
FAAO 8260.19, Flight Procedures and Airspace, Paras 404 and 815.
FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Paras 275, 278, 943, 957, and 997.
AIM, Paragraph 5-5-5, Missed Approach

4–8–10. APPROACH INFORMATION

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

a. Initial approach altitude.

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

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

d. Final approach course and altitude.

e. Missed approach procedures if considered necessary.

PHRASEOLOGY–

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

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

REFERENCE–

AIM, Paragraph 5-1-17, Cold Temperature Operations
AIM, Paragraph 5-5-4, Instrument Approach
AIM, Paragraph 5-5-5, Missed Approach

4–8–11. PRACTICE APPROACHES

Except for military aircraft operating at military airfields, ensure that neither VFR nor IFR practice approaches disrupt the flow of other arriving and departing IFR or VFR aircraft. Authorize, withdraw authorization, or refuse to authorize practice approaches as traffic conditions require. Normally, approaches in progress should not be terminated.

NOTE–

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

a. Separation.

1. IFR aircraft practicing instrument approaches must be afforded approved separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 minima until:

(a) The aircraft lands, and the flight is terminated, or

(b) The pilot cancels the flight plan.

2. Where procedures require application of IFR separation to VFR aircraft practicing instrument approaches, IFR separation in accordance with Chapter 3, Chapter 4, Chapter 5, Chapter 6, and Chapter 7 must be provided. Controller responsibility for separation begins at the point where the approach clearance becomes effective. Except for super or heavy aircraft, 500 feet vertical separation may be applied between VFR aircraft and between a VFR and an IFR aircraft.

REFERENCE–

FAAO JO 7210.3, Para 6–4–4, Practice Instrument Approaches.
FAAO JO 7210.3, Para 10–4–5, Practice Instrument Approaches.

3. Where separation services are not provided to VFR aircraft practicing instrument approaches, the controller must;

(a) Instruct the pilot to maintain VFR.

(b) Advise the pilot that separation services are not provided.

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

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

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

REFERENCE–
FAAO JO 7110.65, Para 7–7–5, Altitude Assignments.

5. All VFR aircraft must be instructed to maintain VFR on initial contact or as soon as possible thereafter.

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

b. Missed Approaches.

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

REFERENCE–
FAAO JO 7110.65, Para 4–8–9, Missed Approach.

2. VFR aircraft are not automatically authorized to execute the missed approach procedure. This authorization must be specifically requested by the pilot and approved by the controller. When a missed approach has been approved, separation must be provided throughout the missed approach.

REFERENCE–
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

4–8–12. LOW APPROACH AND TOUCH-AND-GO

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

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

"Maintain VFR, contact tower."

(Issue other instructions as appropriate.)

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

(b) Significant operational advantages can be obtained.

(c) Within 40 miles of the antenna.

(d) Up to and including FL 230.

(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 display.

REFERENCE–
FAAO JO 7210.3, Para 8-2-1, Three Mile Airspace Operations
FAAO JO 7210.3, Para 11-8-15, Single Site Coverage ATTS Operations

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.

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) Significant operational advantages can be obtained.

(b) Within 40 miles of the preferred sensor, and within the 3 NM separation area.

(c) The preferred sensor is providing reliable beacon targets.

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

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

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

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–
FAAO JO 7210.3, Para 8-2-1, Three Mile Airspace Operations
FAAO JO 7210.3, Para 11-8-15, Single Site Coverage ATTS 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 miles of the antenna.

(d) Below FL 180.

(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) Less than 40 miles from the antenna, below FL180, 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.

f. STARS Multi−Sensor Mode:

NOTE−

1. *In Multi−Sensor Mode, STARS displays targets as filled and unfilled boxes, depending upon the target's distance from the radar site providing the data. Since there is presently no way to identify which specific site is providing data for any given target, utilize separation standards for targets 40 or more miles from the antenna.*

2. *When operating in STARS Single Sensor Mode, if TRK appears in the data block, handle in accordance with para 5−3−7, Identification Status, subpara b, and take appropriate steps to establish nonradar separation.*

3. *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 para 2−1−6 , Safety Alert.*

WAKE TURBULENCE APPLICATION

g. 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:

(1) Heavy - *6 miles.*

(2) Large - *7 miles.*

(3) Small - *8 miles.*

(c) Behind heavy:

(1) Heavy - *4 miles.*

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

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.

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.

NOTE−

The application of Paragraph 5-8-3, Successive or Simultaneous Departures, satisfies this requirement.

WAKE TURBULENCE APPLICATION

h. In addition to subpara g, 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:

NOTE−

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

1. Small behind large− *4 miles*.

2. Small behind heavy− *6 miles.*

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.

Section 6. Vectoring

5–6–1. APPLICATION

Vector aircraft:

a. In controlled airspace for separation, safety, noise abatement, operational advantage, confidence maneuver, or when a pilot requests.

b. In Class G airspace only upon pilot request and as an additional service.

c. At or above the MVA or the minimum IFR altitude except as authorized for radar approaches, special VFR, VFR operations, or by Para 5–6–3, Vectors Below Minimum Altitude.

NOTE–
VFR aircraft not at an altitude assigned by ATC may be vectored at any altitude. It is the responsibility of the pilot to comply with the applicable parts of CFR Title 14.

REFERENCE–
FAAO JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.
FAAO JO 7110.65, Para 7–5–2, Priority.
FAAO JO 7110.65, Para 7–5–4, Altitude Assignment.
FAAO JO 7110.65, Para 7–7–5, Altitude Assignments.
14 CFR Section 91.119, Minimum Safe Altitudes: General.

d. In airspace for which you have control jurisdiction, unless otherwise coordinated.

e. So as to permit it to resume its own navigation within radar coverage.

f. Operating special VFR only within Class B, Class C, Class D, or Class E surface areas.

g. Operating VFR at those locations where a special program is established, or when a pilot requests, or you suggest and the pilot concurs.

REFERENCE–
FAAO JO 7110.65, Para 4–4–1, Route Use.
FAAO JO 7110.65, Para 7–2–1, Visual Separation.
FAAO JO 7110.65, Para 7–5–3, Separation.
FAAO JO 7110.65, Para 7–6–1, Application.
FAAO JO 7110.65, Para 9–4–4, Separation Minima.
FAAO JO 7210.3, Chapter 11, Section 1, Terminal VFR Radar Services.

5–6–2. METHODS

a. Vector aircraft by specifying:

1. Direction of turn, if appropriate, and magnetic heading to be flown, or

PHRASEOLOGY–
TURN LEFT/RIGHT HEADING (degrees).

FLY HEADING (degrees).

FLY PRESENT HEADING.

DEPART (fix) HEADING (degrees).

2. The number of degrees, in group form, to turn and the direction of turn, or

PHRASEOLOGY–
TURN (number of degrees) DEGREES LEFT/RIGHT.

3. For NO-GYRO procedures, the type of vector, direction of turn, and when to stop turn.

PHRASEOLOGY–
THIS WILL BE A NO-GYRO VECTOR,

TURN LEFT/RIGHT.

STOP TURN.

b. When initiating a vector, advise the pilot of the purpose, and if appropriate, what to expect when radar navigational guidance is terminated.

PHRASEOLOGY–
VECTOR TO (fix or airway).

VECTOR TO INTERCEPT (name of NAVAID) (specified) RADIAL.

VECTOR FOR SPACING.

(if appropriate) EXPECT DIRECT (NAVAID, waypoint, fix)

VECTOR TO FINAL APPROACH COURSE,

or if the pilot does not have knowledge of the type of approach,

VECTOR TO (approach name) FINAL APPROACH COURSE.

NOTE–
Determine optimum routing based on factors such as wind, weather, traffic, pilot requests, noise abatement, adjacent sector requirement, and letters of agreement.

c. When vectoring or approving course deviations, assign an altitude to maintain when:

1. The vector or approved deviation is off an assigned procedure which contains altitude instructions, i.e., instrument approach, etc.

2. The previously issued clearance included crossing restrictions.

REFERENCE–
FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments.

3. The vector or approved deviation is off an assigned procedure that contains published altitude restrictions, i.e., SID, STAR, and a clearance to Climb Via/Descend Via has been issued.

d. When vectoring or approving an aircraft to deviate off of a procedure that includes published altitude restrictions, advise the pilot if you intend on clearing the aircraft to resume the procedure.

PHRASEOLOGY–
FLY HEADING (degrees), MAINTAIN (altitude), EXPECT TO RESUME (SID, STAR, etc.).

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

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

e. Provide radar navigational guidance until the aircraft is:

1. Established within the airspace to be protected for the nonradar route to be flown, or

2. On a heading that will, within a reasonable distance, intercept the nonradar route to be flown, and

3. Informed of its position unless the aircraft is RNAV, FMS, or DME equipped and being vectored toward a VORTAC/TACAN or waypoint and within the service volume of the NAVAID.

PHRASEOLOGY–
(Position with respect to course/fix along route), RESUME OWN NAVIGATION, FLY HEADING (degrees). WHEN ABLE, PROCEED DIRECT (name of fix), RESUME (SID/STAR/transition/procedure).

REFERENCE–
FAAO JO 7110.65, Chapter 4, Section 1, NAVAID Use Limitations.
FAAO JO 7110.65,Paragraph 4-5-7, Altitude Information

f. Aircraft instructed to resume a procedure which contains restrictions (SID/STAR, etc.) must be issued/reissued all applicable restrictions or must be advised to comply with those restrictions.

PHRASEOLOGY–
RESUME (name/SID/transition/STAR), COMPLY WITH RESTRICTIONS.

PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude) CLIMB VIA/DESCEND VIA (SID/STAR)

EXAMPLE–
"Resume the Mudde One Arrival, comply with restrictions."
"Cleared direct Luxor, resume the Ksino One arrival, comply with restrictions."
"Cleared direct HITME, cross HITME at or above one one thousand, climb via the Boach Five departure."

g. Aircraft may not be vectored off an Obstacle Departure Procedure (ODP), or issued an altitude lower than published altitude on an ODP, until at or above the MVA/MIA, at which time the ODP is cancelled.

NOTE–
Once an aircraft has been vectored off an Obstacle Departure Procedure, the procedure is cancelled and ATC cannot clear the aircraft to resume the ODP.

REFERENCE–
P/CG– Obstacle Departure Procedure

h. Aircraft vectored off an RNAV route must be recleared to the next waypoint or as requested by the pilot.

i. When flight data processing is available, update the route of flight in the computer unless an operational advantage is gained and coordination is accomplished.

j. Inform the pilot when a vector will take the aircraft across a previously assigned nonradar route.

PHRASEOLOGY–
EXPECT VECTOR ACROSS (NAVAID radial) (airway/route/course) FOR (purpose).

REFERENCE–
FAAO JO 7110.65, Para 7–6–1, Application.

5–6–3. VECTORS BELOW MINIMUM ALTITUDE

a. Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the radar antenna and before it reaches the minimum

altitude for IFR operations if separation from prominent obstacles shown on the radar scope is applied in accordance with the following:

1. If the flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle.

2. If the flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle.

REFERENCE–
P/CG Term – Obstacle.
P/CG Term – Obstruction.
P/CG Term – Prominent Obstacle.

b. 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.

REFERENCE–
FAAO JO 7210.3, Para 3–8–5, Establishing Diverse Vector Area/s (DVA).

Section 7. Speed Adjustment

5–7–1. APPLICATION

Keep speed adjustments to the minimum necessary to achieve or maintain required or desired spacing. Avoid adjustments requiring alternate decreases and increases. Terminate speed adjustments when no longer needed.

NOTE–
It is the pilot's responsibility and prerogative to refuse speed adjustment that he/she considers excessive or contrary to the aircraft's operating specifications.

a. Consider the following when applying speed control:

1. Determine the interval required and the point at which the interval is to be accomplished.

2. Implement speed adjustment based on the following principles.

(a) Priority of speed adjustment instructions is determined by the relative speed and position of the aircraft involved and the spacing requirement.

(b) Speed adjustments are not achieved instantaneously. Aircraft configuration, altitudes, and speed determine the time and distance required to accomplish the adjustment.

3. Use the following techniques in speed control situations:

(a) Compensate for compression when assigning air speed adjustment in an in-trail situation by using one of the following techniques:

(1) Reduce the trailing aircraft first.

(2) Increase the leading aircraft first.

(b) Assign a specific airspeed if required to maintain spacing.

(c) Allow increased time and distance to achieve speed adjustments in the following situations:

(1) Higher altitudes.

(2) Greater speed.

(3) Clean configurations.

(d) Ensure that aircraft are allowed to operate in a clean configuration as long as circumstances permit.

(e) Keep the number of speed adjustments per aircraft to the minimum required to achieve and maintain spacing.

b. Do not assign speed adjustment to aircraft:

1. At or above FL 390 without pilot consent.

2. Executing a published high altitude instrument approach procedure.

3. In a holding pattern.

REFERENCE–
FAAO JO 7110.65, Para 4–6–4, Holding Instructions.

4. Inside the final approach fix on final or a point 5 miles from the runway, whichever is closer to the runway.

c. At the time approach clearance is issued, previously issued speed adjustments must be restated if required.

d. Approach clearances cancel any previously assigned speed adjustment. Pilots are expected to make their own speed adjustments to complete the approach unless the adjustments are restated.

e. If feasible, when issuing speed adjustments to aircraft cleared along a route or procedure that has published speed restrictions, advise aircraft where to resume published speed.

f. Express speed adjustments in terms of knots based on indicated airspeed (IAS) in 5–knot increments. At or above FL 240, speeds may be expressed in terms of Mach numbers in 0.01 increments for turbojet aircraft with Mach meters (i.e., Mach 0.69, 0.70, 0.71, etc.).

NOTE–
1. *Pilots complying with speed adjustment instructions should maintain a speed within plus or minus 10 knots or 0.02 Mach number of the specified speed.*

2. *When assigning speeds to achieve spacing between aircraft at different altitudes, consider that ground speed may vary with altitude. Further speed adjustment may be necessary to attain the desired spacing.*

REFERENCE–
FAAO JO 7110.65, Para 5–7–2, Methods.

5–7–2. METHODS

a. Instruct aircraft to:

1. Maintain present/specific speed.

2. Maintain specified speed or greater/less.

3. Maintain the highest/lowest practical speed.

4. Increase or reduce to a specified speed or by a specified number of knots.

PHRASEOLOGY–
SAY AIRSPEED.

SAY MACH NUMBER.

MAINTAIN PRESENT SPEED.

MAINTAIN (specific speed) KNOTS.

MAINTAIN (specific speed) KNOTS OR GREATER.

DO NOT EXCEED (speed) KNOTS.

MAINTAIN MAXIMUM FORWARD SPEED.

MAINTAIN SLOWEST PRACTICAL SPEED.

INCREASE/REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

EXAMPLE–
"*Increase speed to Mach point seven two.*"
"Reduce speed to two five zero."
"Reduce speed twenty knots."
"Maintain two eight zero knots."
"Maintain maximum forward speed."

NOTE–
1. *A pilot operating at or above 10,000 feet MSL on an assigned speed adjustment greater than 250 knots is expected to comply with 14 CFR Section 91.117(a) when cleared below 10,000 feet MSL, within domestic airspace, without notifying ATC. Pilots are expected to comply with the other provisions of 14 CFR Section 91.117 without notification.*

2. *Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.703.)*

3. *The phrases "maintain maximum forward speed" and "maintain slowest practical speed" are primarily intended for use when sequencing a group of aircraft. As the sequencing plan develops, it may be necessary to determine the specific speed and/or make specific speed assignments.*

b. To obtain pilot concurrence for a speed adjustment at or above FL 390, as required by Para 5–7–1, Application, use the following phraseology.

PHRASEOLOGY–
(Speed adjustment), IF UNABLE ADVISE.

EXAMPLE–
"Reduce speed to one niner zero, if unable advise."

c. Simultaneous speed reduction and descent can be extremely difficult, particularly for turbojet aircraft. Specifying which action is to be accomplished first removes any doubt the pilot may have as to controller intent or priority. Specify which action is expected first when combining speed reduction with a descent clearance.

1. Speed reductions prior to descent.

PHRASEOLOGY–
REDUCE SPEED:

TO (specified speed),

or

(number of knots) KNOTS.

THEN, DESCEND AND MAINTAIN (altitude).

2. Speed reduction following descent.

PHRASEOLOGY–
DESCEND AND MAINTAIN (altitude).

THEN, REDUCE SPEED:

TO (specified speed in knots),

or

TO MACH (Mach number),

or

(number of knots) KNOTS.

NOTE–
When specifying descent prior to speed reduction, consider the maximum speed requirements specified in 14 CFR Section 91.117. It may be necessary for the pilot to level off temporarily and reduce speed prior to descending below 10,000 feet MSL.

d. Specify combined speed/altitude fix crossing restrictions.

PHRASEOLOGY–
CROSS (fix) AT AND MAINTAIN (altitude) AT (specified speed) KNOTS.

EXAMPLE–
"Cross Robinsville at and maintain six thousand at two three zero knots."

REFERENCE–
FAAO JO 7110.65, Para 2–4–17, Numbers Usage.
FAAO JO 7110.65, Para 4–5–7, Altitude Information.

e. When issuing speed adjustments to aircraft cleared on procedures with published speed restrictions specify the point at which the issued restriction begins, ends, or changes the published restrictions.

PHRASEOLOGY–
CROSS (fix/waypoint) AT (speed).

MAINTAIN (speed) UNTIL (fix/waypoint),

THEN (additional instructions).

RESUME PUBLISHED SPEED.

COMPLY WITH SPEED RESTRICTIONS.

EXCEPT (if required)

DELETE SPEED RESTRICTIONS.

CLIMB/DESCEND VIA (SID/STAR name and number) (transition if required.)

NOTE–
1. *Aircraft will meet all published speed restrictions when on any route or procedure with published speed restrictions regardless of climb via or descend via clearance.*

2. *Due to variations of aircraft types, Flight Management Systems, and environmental conditions, ATC should anticipate that aircraft will begin speed adjustments at varying locations along cleared routes or procedures that contain published speed restrictions.*

3. *Issuing speed adjustments to aircraft flying procedures with published speed restrictions may impact the pilot's ability to fly the intended flight profile of the procedure.*

EXAMPLE–
1. *"Cross Alisa at two two zero knots, then climb via the TIMMY One departure."*

NOTE–
The aircraft will maintain the ATC assigned speed until Alisa waypoint and will then comply with the speed restrictions on the TIMMY One departure

EXAMPLE–
2. "Cross Alisa at one zero thousand, then climb via the TIMMY One departure, except maintain two two zero knots."

NOTE–
The aircraft will maintain the ATC assigned speed of two two zero knots and will not meet any published speed restrictions. Aircraft will meet all published altitude restrictions after Alisa.

EXAMPLE–
3. "Maintain two two zero knots until BALTR then resume published speed."

NOTE–
The ATC assigned speed assignment of two two zero knots would apply until BALTR. The aircraft would then comply with the published speed restrictions.

EXAMPLE–
4. "Descend via the KEPEC Two arrival, except after NIPZO maintain one eight zero knots."

NOTE–
The aircraft will comply with all published restrictions. After NIPZO, the aircraft will continue to comply with altitude restrictions, but will comply with the ATC assigned speed adjustment.

REFERENCE–
FAAO JO 7110.65, Para 2-4-17, Numbers Usage
FAAO JO 7110.65, Para 4-5-7, Altitude Information
FAAO JO 7110.65, Para 5-7-1, Application

5–7–3. SPEED ASSIGNMENTS

When assigning airspeeds, use the following:

a. To aircraft operating between FL 280 and 10,000 feet, a speed not less than 250 knots or the equivalent Mach number.

NOTE–
1. *On a standard day the Mach numbers equivalent to 250 knots CAS (subject to minor variations) are:*
FL 240–0.6
FL 250–0.61
FL 260–0.62
FL 270–0.64
FL 280–0.65
FL 290–0.66.

2. *A pilot will advise if unable to comply with the speed assignment.*

b. To aircraft operating beneath Class B airspace or in a VFR corridor designated through Class B airspace: assign a speed not more than 200 knots.

c. To arrival aircraft operating below 10,000 feet:

1. Turbojet aircraft:

(a) Assign a speed not less than 210 knots, except for the aircraft as specified in subparagraph b above, or

(b) Assign a speed not less than 170 knots when the aircraft is within 20 flying miles of the runway threshold.

2. Reciprocating and turboprop aircraft:

(a) Assign a speed not less than 200 knots, or

(b) Assign a speed not less than 150 knots when the aircraft is within 20 flying miles of the runway threshold.

d. To departures:

1. Turbojet aircraft: assign a speed not less than 230 knots.

2. Reciprocating and turboprop aircraft: assign a speed not less than 150 knots.

e. To helicopters: Assign a speed not less than 60 knots.

REFERENCE–
FAAO JO 7110.65, Para 5–7–2, Methods.

f. Lower speeds may be assigned when operationally advantageous.

NOTE–
1. *A pilot operating at or above 10,000 feet MSL on an assigned speed adjustment greater than 250 knots is expected to comply with 14 CFR Section 91.117(a) when cleared below 10,000 feet MSL, within domestic airspace, without notifying ATC. Pilots are expected to comply with the other provisions of 14 CFR Section 91.117 without notification.*

2. ***Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace*** *underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.70).*

3. *The phrases "maintain maximum forward speed" and "maintain slowest practical speed" are primarily intended for use when sequencing a group of aircraft. As the sequencing plan develops, it may be necessary to determine the specific speed and/or make specific speed assignments.*

REFERENCE–
FAAO JO 7110.65, Para 5–7–2, Methods.
14 CFR Sections 91.117(c) and 91.703.

5–7–4. TERMINATION

Advise aircraft when speed adjustments are no longer needed.

a. Advise aircraft to "resume normal speed" when ATC-assigned speed adjustments are no longer required and no published speed restrictions apply.

PHRASEOLOGY–
RESUME NORMAL SPEED.

NOTE–
"Resume normal speed" is only used where there is no underlying published speed restriction. It does not delete speed restrictions on upcoming segments of flight and does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

b. Instruct aircraft to "comply with speed restrictions" applicable to the charted procedure or route being flown.

PHRASEOLOGY–
COMPLY WITH SPEED RESTRICTIONS

NOTE–
The phraseology "comply with restrictions" requires compliance with all altitude and/or speed restrictions depicted on the procedure.

REFERENCE–
FAAO JO 7110.65, Para 5-6-2, Methods

c. Advise aircraft to "resume published speed" when aircraft have been assigned an unpublished speed and ATC wants aircraft to meet subsequent published speed restrictions on the route or procedure.

PHRASEOLOGY–
RESUME PUBLISHED SPEED

REFERENCE–
FAAO JO 7110.65, Para 4-5-7, Altitude Information

d. Advise aircraft when either ATC assigned speed adjustments or published speed restrictions are no longer required.

PHRASEOLOGY–
DELETE SPEED RESTRICTIONS

NOTE–
When deleting published restrictions, ATC must ensure

obstacle clearance until aircraft are established on a route where no published restrictions apply. This does not relieve the pilot of those speed restrictions which are applicable to 14 CFR Section 91.117.

REFERENCE–
FAAO JO 7110.65, Para 5-7-1, Application

REFERENCE–
FAAO JO 7110.65, Para 2–1–19, Wake Turbulence.
FAAO JO 7110.65, Section 5, Radar Separation, Para 5–5–1, Application.
FAAO JO 7110.65, Para 7–2–1, Visual Separation.
FAAO JO 7110.65, Para 5–5–4, Minima.
FAAO JO 7210.3, Para 2–1–15, Authorization for Separation Services by Towers.

b. When timed approaches are being conducted, the radar controller must maintain the radar separation specified in Para 6–7–5, Interval Minima, until the aircraft is observed to have passed the final approach fix inbound (nonprecision approaches) or the OM or the fix used in lieu of the outer marker (precision approaches) and is within 5 miles of the runway on the final approach course or until visual separation can be provided by the tower.

REFERENCE–
FAAO JO 7110.65, Para 5–4–6, Receiving Controller Handoff.
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.
FAAO JO 7110.65, Para 5–9–6, Parallel Dependent Approaches.
FAAO JO 7110.65, Para 6–7–2, Approach Sequence.

5–9–6. SIMULTANEOUS DEPENDENT APPROACHES

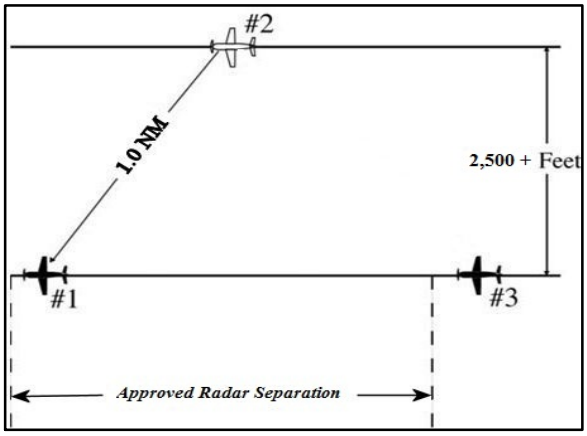
TERMINAL

a. Apply the following minimum separation when conducting simultaneous dependent approaches:

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn on.

2. Provide a minimum of 1 mile radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are at least 2,500 feet but no more than 3,600 feet apart.

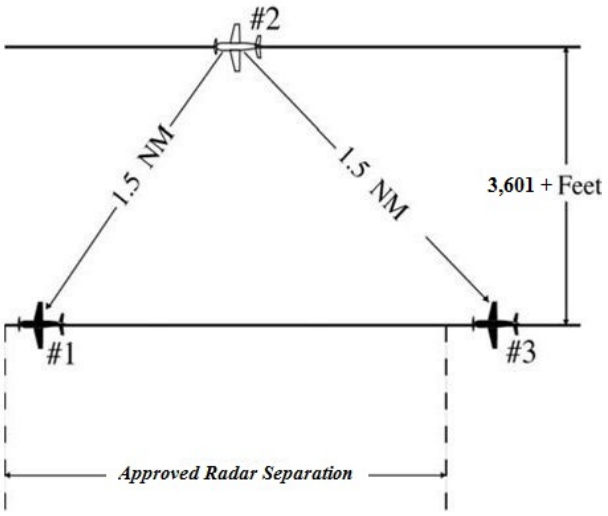
FIG 5–9–4
Simultaneous Dependent Approaches



EXAMPLE–
In FIG 5–9–4, Aircraft 2 is 1.0 mile from Aircraft 1. Approved radar separation must be maintained between Aircraft 1 and Aircraft 3.

3. Provide a minimum of 1.5 miles radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are more than 3,600 feet but no more than 8,300 feet apart.

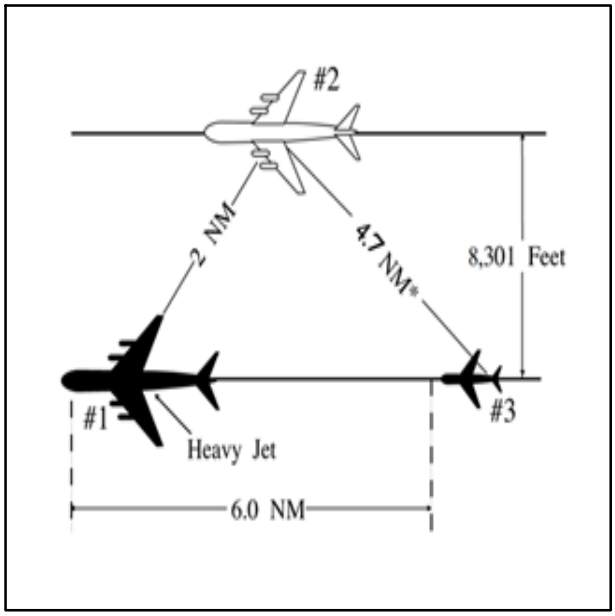
FIG 5–9–5
Simultaneous Dependent Approaches



EXAMPLE–
In FIG 5–9–5, Aircraft 2 is 1.5 miles from Aircraft 1, and Aircraft 3 is 1.5 miles or more from Aircraft 2. Approved radar separation must be maintained between aircraft on the same final.

4. Provide a minimum of 2 miles radar separation diagonally between successive aircraft on adjacent final approach courses where runway centerlines are more than 8,300 feet but no more than 9,000 feet apart.

FIG 5–9–6
Simultaneous Dependent Approaches



EXAMPLE–
*In FIG 5–9–6, Aircraft 2 is 2 miles from heavy Aircraft 1. Aircraft 3 is a small aircraft and is 6 miles from Aircraft 1. *The resultant separation between Aircraft 2 and 3 is at least 4.7 miles.*

5. Provide the minimum approved radar separation between aircraft on the same final approach course.

REFERENCE–
FAAO JO 7110.65, Section 5, Radar Separation, Para 5–5–4 , Minima.

b. The following conditions are required when applying the minimum radar separation on adjacent final approach courses allowed in subparagraph a:

NOTE–
1. *Simultaneous dependent approaches involving an RNAV approach may only be conducted when (GPS) appears in the approach title or a chart note states that GPS is required.*

2. *Simultaneous dependent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches to adjacent runways.*

1. Apply this separation standard only after aircraft are established on the parallel final approach course.

2. Straight-in landings will be made.

3. Missed approach procedures do not conflict.

4. Aircraft are informed that approaches to both runways are in use. This information may be provided through the ATIS.

5. Approach control must have the interphone capability of communicating directly with the local controller at locations where separation responsibility has not been delegated to the tower.

NOTE–
The interphone capability is an integral part of this procedure when approach control has the sole separation responsibility.

REFERENCE–
FAAO JO 7110.65, Para 5–9–5 , Approach Separation Responsibility.
FAAO JO 7210.3, Para 2–1–15, Authorization for Separation Services by Towers.

c. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight, such as surface wind direction and velocity, wind shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

REFERENCE–
FAAO JO 7110.65, Para 5–9–2 , Final Approach Course Interception.

5–9–7. SIMULTANEOUS INDEPENDENT APPROACHES– DUAL & TRIPLE

TERMINAL

a. Apply the following minimum separation when conducting simultaneous independent approaches:

1. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn-on to parallel final approach.

NOTE–
1. *During triple parallel approaches, no two aircraft will be assigned the same altitude during turn-on. All three aircraft will be assigned altitudes which differ by a minimum of 1,000 feet. Example: 3,000, 4,000, 5,000; 7,000, 8,000, 9,000.*

2. *Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.*

2. Dual parallel runway centerlines are at least 3,600 feet apart, or dual parallel runway centerlines are at least 3,000 feet apart with a 2.5° to 3.0° offset approach to either runway and the airport field elevation is 2,000 feet MSL or less.

NOTE–
Airport field elevation requirement does not apply to dual parallel runways that are 4,300 feet or more apart.

3. Triple parallel approaches may be conducted under one of the following conditions:

(a) Parallel runway centerlines are at least 3,900 feet apart and the airport field elevation is 2,000 feet MSL or less; or

(b) Parallel runway centerlines are at least 3,000 feet apart, a 2.5° to 3.0° offset approach to both outside runways, and the airport field elevation is 2,000 feet MSL or less; or

(c) Parallel runway centerlines are at least 3,000 feet apart, a single 2.5° to 3.0° offset approach to either outside runway while parallel approaches to the remaining two runways are separated by at least 3,900 feet, and the airport field elevation is 2,000 feet MSL or less.

4. Provide the minimum applicable radar separation between aircraft on the same final approach course.

b. A color digital display set to a 4 to 1 (4:1) aspect ratio (AR) with visual and aural alerts, such as the STARS final monitor aid (FMA), and a surveillance update rate at least 4.8 seconds must be used to monitor approaches where:

1. Dual parallel runway centerlines are at least 3,000 and less than 4,300 feet apart.

2. Triple parallel runway centerlines are at least 3,000 but less than 5,000 feet apart and the airport field elevation is 2,000 feet MSL or less.

3. Triple parallel approaches to airports where the airport field elevation is more than 2,000 feet MSL require use of the FMA system and an approved FAA aeronautical study.

NOTE–
FMA is not required to monitor the NTZ for runway centerlines 4,300 feet or greater for dual runways, and 5,000 feet or greater for triple operations.

c. FUSION must be discontinued on the FMA displays and set to a single-sensor, when conducting final monitoring activities.

REFERENCE–
FAAO JO 7110.65, Para 5–5–4, Minima.

d. The following conditions must be met when conducting dual or triple simultaneous independent approaches:

NOTE–
Simultaneous independent approaches may only be conducted where instrument approach charts specifically authorize simultaneous approaches.

REFERENCE–
FAAO JO 7210.3, Para 10-4-6, Simultaneous Approaches (Dependent/Independent)

1. Straight-in landings will be made.

2. All appropriate communication, navigation, and surveillance systems are operating normally.

3. Inform aircraft that simultaneous independent approaches are in use, or when runway centerlines are less than 4,300 feet PRM approaches are in use, prior to aircraft departing an outer fix. This information may be provided through the ATIS.

REFERENCE–
P/CG Term– Precision Runway Monitor (PRM) System.

4. Clear the aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

NOTE–
Not applicable to approaches with RF legs.

5. An NTZ at least 2,000 feet wide is established an equal distance between extended runway final approach courses and must be depicted on the monitor display. The primary responsibility for navigation on the final approach course rests with the pilot. Control instructions and information are issued only to ensure separation between aircraft and to prevent aircraft from penetrating the NTZ.

6. Monitor all approaches regardless of weather. Monitor local control frequency to receive any aircraft transmission. Issue control instructions as necessary to ensure aircraft do not enter the NTZ.

NOTE–
1. *Separate monitor controllers, each with transmit/receive and override capability on the local control frequency, must ensure aircraft do not penetrate the*

depicted NTZ. Facility directives must define responsibility for providing the minimum applicable longitudinal separation between aircraft on the same final approach course.

2. *The aircraft is considered the center of the primary radar return for that aircraft, or, if an FMA or other color final monitor aid is used, the center of the digitized target of that aircraft, for the purposes of ensuring an aircraft does not penetrate the NTZ. The provisions of para 5−5−2, Target Separation, apply also.*

e. The following procedures must be used by the final monitor controllers:

1. Instruct the aircraft to return to the correct final approach course when aircraft are observed to overshoot the turn-on or to continue on a track which will penetrate the NTZ.

PHRASEOLOGY−
YOU HAVE CROSSED THE FINAL APPROACH COURSE. TURN (left/right) IMMEDIATELY AND RETURN TO THE FINAL APPROACH COURSE,
or
TURN (left/right) AND RETURN TO THE FINAL APPROACH COURSE.

2. Instruct aircraft on the adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed penetrating or in your judgment will penetrate the NTZ.

PHRASEOLOGY−
TRAFFIC ALERT, (call sign), TURN (right/left) IMMEDIATELY HEADING (degrees), CLIMB AND MAINTAIN (altitude).

3. Terminate radar monitoring when one of the following occurs:

(a) Visual separation is applied.

(b) The aircraft reports the approach lights or runway in sight.

(c) The aircraft is 1 mile or less from the runway threshold, if procedurally required and contained in facility directives.

4. Do not inform the aircraft when radar monitoring is terminated.

5. Do not apply the provisions of Paragraph 5-13-1, Monitor on PAR Equipment, for simultaneous independent approaches.

f. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when simultaneous independent approaches are being conducted to parallel runways. Factors include, but are not limited to, wind direction/velocity, windshear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of approach in use.

REFERENCE−
FAAO JO 7110.65, Para 5−1−13 , Radar Service Termination.
FAAO JO 7110.65, Para 5−9−2 , Final Approach Course Interception.

5−9−8. SIMULTANEOUS INDEPENDENT CLOSE PARALLEL APPROACHES −PRECISION RUNWAY MONITOR (PRM) APPROACHES

TERMINAL

a. PRM approaches may only be conducted when charted in the approach title, and where instrument approach charts specifically authorize simultaneous approaches.

REFERENCE−
P/CG- Precision Runway Monitor (PRM) System
P/CG-Simultaneous Close Parallel Approaches

b. PRM approaches must be assigned when conducting instrument approaches to dual and triple parallel runways with runway centerlines separated by less than 4,300 feet.

c. Provide a minimum of 1,000 feet vertical or a minimum of 3 miles radar separation between aircraft during turn-on to parallel or offset final approach.

NOTE−
Communications transfer to the tower controller's frequency must be completed prior to losing vertical separation between aircraft.

d. Provide the minimum applicable radar separation between aircraft on the same final approach course.

REFERENCE−
FAAO JO 7110.65, Para 5−5−4 , Minima.

e. The following conditions must be met when conducting dual and triple PRM approaches:

1. Straight-in landings will be made.

2. All appropriate communication, navigation, and surveillance systems are operating normally.

3. Inform aircraft that PRM approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

3. Instruct aircraft on the adjacent final approach course to alter course to avoid the deviating aircraft when an aircraft is observed penetrating or in your judgment will penetrate the NTZ.

NOTE–
An instruction that may include a descent to avoid the deviating aircraft should only be used when there is no other reasonable option available to the controller. In such a case, the descent must not put the aircraft below the MVA.

PHRASEOLOGY–
TRAFFIC ALERT, (call sign), TURN (left/right) IMMEDIATELY HEADING (DEGREES), CLIMB AND MAINTAIN (altitude).

4. Terminate radar monitoring when one of the following occurs:

(a) The lead straight in aircraft passes the end of the NTZ nearest the runway threshold.

(b) The trailing offset aircraft passes the end of the NTZ nearest the runway threshold and has reported the lead straight in aircraft in sight.

(c) The aircraft begins the visual segment of the approach.

5. Do not inform the aircraft when radar monitoring is terminated.

6. Do not apply the provisions of paragraph 5-13-1, Monitor on PAR Equipment, for simultaneous approaches.

d. Advise the pilot of the trailing offset aircraft of traffic on the adjacent lead straight-in approach course, if that traffic will be a factor in the visual segment of the approach. The provisions of Paragraphs 7-2-1, Visual Separation, subparagraph a2**,** concerning visual separation between aircraft being provided by the tower must not be applied to aircraft conducting SOIAs.

NOTE–
Once advised, the pilot is authorized to continue past the offset approach MAP if all of the following conditions are met: The pilot has the straight-in approach traffic in sight and expects the traffic to remain in sight; the pilot advises ATC that the traffic is in sight; and the pilot has the runway environment in sight. Otherwise, it is the pilot's responsibility to execute a missed approach at the offset approach MAP.

e. Ensure that the trailing offset aircraft is positioned to facilitate the flight crew's ability to see the lead straight in traffic from the nominal clear-of-clouds point to the offset approach MAP so that the flight crew can remain separated from that traffic visually from the offset approach MAP to the runway threshold.

NOTE–
After accepting a clearance for an offset PRM approach, pilots must remain on the offset approach course until passing the offset approach MAP prior to alignment with the runway centerline. Between the offset approach MAP and the runway threshold, the pilot of the offset approach aircraft assumes visual separation responsibility from the aircraft on the straight-in approach, which means maneuvering the aircraft as necessary to avoid the straight in approach traffic until landing, and providing wake turbulence avoidance, if necessary.

f. In the visual segment between the offset approach MAP and the runway threshold, if the pilot of the trailing offset aircraft loses visual contact with the lead straight-in traffic, the pilot must advise ATC as soon as practical and follow the published missed approach procedure. If necessary, issue alternate missed approach instructions.

g. Wake turbulence requirements between aircraft on adjacent final approach courses inside the offset approach MAP are as follows (standard in-trail wake separation must be applied between aircraft on the same approach course):

1. When runways are at least 2,500 feet apart, there are no wake turbulence requirements between aircraft on adjacent final approach courses.

2. For runways less than 2,500 feet apart, whenever the ceiling is greater than or equal to 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses need not be applied.

3. For runways less than 2,500 feet apart, whenever the ceiling is less than 500 feet above the MVA, wake vortex spacing between aircraft on adjacent final approach courses, as described in Para 5–5–4, Minima, must be applied unless acceptable mitigating techniques and operational procedures have been documented and verified by an AFS safety assessment and authorized by the Director, Operations-Headquarters, AJT-2. The wake turbulence mitigation techniques employed will be based on each airport's specific runway geometry and meteorological conditions and implemented through local facility directives.

4. Issue all applicable wake turbulence advisories.

REFERENCE–
FAAO JO 8260.49, Para 13.0, Wake Turbulence Requirements.
FAAO JO 7210.3, Para 10–4–6, Simultaneous Independent Approaches.
FAAO JO 7110.65, Para 2–1–20 , Wake Turbulence Cautionary Advisories.
FAAO JO 7110.65, Para 5–5–4 , Minima.

h. Consideration should be given to known factors that may in any way affect the safety of the instrument approach phase of flight when conducting SOIA to parallel runways. Factors include but are not limited to wind direction/velocity, wind–shear alerts/reports, severe weather activity, etc. Closely monitor weather activity that could impact the final approach course. Weather conditions in the vicinity of the final approach course may dictate a change of the approach in use.

REFERENCE–
FAAO JO 7110.65, Para 5–1–13 , Radar Service Termination.
FAAO JO 7110.65, Para 5–9–2 , Final Approach Course Interception.

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

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 an RNAV (RNP) approach that contains a Radius-to-Fix (RF) leg and an aircraft conducting a straight-in ILS/RNAV with vertical guidance/GLS or another RNAV (RNP) approach with an RF leg until both aircraft are established on their respective approach procedures. Ensure dual RNAV (RNP) approaches that contain RF legs are limited to aircraft approaching from opposite downwinds or base legs and all approach pairings must be conducted so that the approach courses do not overlap.

REFERENCE–
FAAO JO 7210.3, Paragraph 10-4-7, Simultaneous Widely-Spaced Parallel Operations

2. Provide the minimum applicable radar separation between aircraft on the same final approach course.

REFERENCE–
FAAO JO 7110.65, para 5-5-4, Minima.

c. The following conditions are required when applying the minimum separation on widely–spaced parallel courses allowed in subpara b:

1. Straight-in landings will be made.

2. The approach system, radar, and appropriate frequencies are operating normally.

3. Inform aircraft that simultaneous approaches are in use prior to aircraft departing an outer fix. This information may be provided through the ATIS.

4. Clear an aircraft to descend to the appropriate glideslope/glidepath intercept altitude soon enough to provide a period of level flight to dissipate excess speed. Provide at least 1 mile of straight flight prior to the final approach course intercept.

NOTE–
Not applicable to approaches with RF legs.

5. Separate final and local controllers are required for each final. Aircraft on the final must be on the appropriate final controller frequency for that runway.

6. Transfer of communication 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–
FAAO JO 7110.65, Para 5-9-2, Final Approach Course Interception.

5–9–11. TRANSITIONAL PROCEDURE

When aircraft are conducting simultaneous dependent, independent, or any approaches allowing for reduced separation, and one of the aircraft executes a go-around or has its approach clearance terminated and prior to losing the approved reduced separation, control instructions must be expeditiously issued to increase separation between the applicable aircraft. These control instructions must establish approved separation (for example, altitude and/or lateral separation via divergence). In addition, wake turbulence cautionary advisories must be issued in accordance with FAAO JO 7110.65, Paragraph 2-1-20, Wake Turbulence Cautionary Advisories.

Section 10. Radar Approaches– Terminal

5–10–1. APPLICATION

a. Provide radar approaches in accordance with standard or special instrument approach procedures.

b. A radar approach may be given to any aircraft upon request and may be offered to aircraft in distress regardless of weather conditions or to expedite traffic.

NOTE–
Acceptance of a radar approach by a pilot does not waive the prescribed weather minima for the airport or for the particular aircraft operator concerned. The pilot is responsible for determining if the approach and landing are authorized under the existing weather minima.

REFERENCE–
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.
FAAO JO 7110.65, Para 5–12–10, Elevation Failure.
FAAO JO 7110.65, Para 4–8–1a, Approach Clearance
P/CG Term – EFVS

5–10–2. APPROACH INFORMATION

a. Issue the following information to an aircraft that will conduct a radar approach. Current approach information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS broadcast code. All items listed below, except for subpara 3 may be omitted after the first approach if repeated approaches are made and no change has occurred. Transmissions with aircraft in this phase of the approach should occur approximately every minute.

REFERENCE–
FAAO JO 7110.65, Para 4–7–10, Approach Information.

1. Altimeter setting.

2. If available, ceiling and visibility if the ceiling at the airport of intended landing is reported below 1,000 feet or below the highest circling minimum, whichever is greater, or if the visibility is less than 3 miles. Advise pilots when weather information is available via the Automated Weather Observing System (AWOS)/Automated Surface Observing System (ASOS) and, if requested, issue the appropriate frequency.

NOTE–
Automated weather observing systems may be set to provide one minute updates. This one minute data may be useful to the pilot for possible weather trends. Controllers provide service based solely on official weather, i.e., hourly and special observations.

3. Issue any known changes classified as special weather observations as soon as possible. Special weather observations need not be issued after they are included in the ATIS broadcast and the pilot states the appropriate ATIS broadcast code.

4. Pertinent information on known airport conditions if they are considered necessary to the safe operation of the aircraft concerned.

5. Lost communication procedures as specified in Para 5–10–4, Lost Communications.

b. Before starting final approach:

NOTE–
1. *ASR approach procedures may be prescribed for specific runways, for an airport/heliport, and for helicopters only to a "point-in-space," i.e., a MAP from which a helicopter must be able to proceed to the landing area by visual reference to a prescribed surface route.*

2. *Occasionally, helicopter PAR approaches are available to runways where conventional PAR approaches have been established. In those instances where the two PAR approaches serve the same runway, the helicopter approach will have a steeper glide slope and a lower decision height. By the controllers designating the approach to be flown, the helicopter pilot understands which of the two approaches he/she has been vectored for and which set of minima apply.*

1. Inform the aircraft of the type of approach, runway, airport, heliport, or other point, as appropriate, to which the approach will be made. Specify the airport name when the approach is to a secondary airport.

PHRASEOLOGY–
THIS WILL BE A P–A–R/SURVEILLANCE APPROACH TO:

RUNWAY (runway number),

or

(airport name) AIRPORT, RUNWAY (runway number),

or

(airport name) AIRPORT/HELIPORT.

THIS WILL BE A COPTER P–A–R APPROACH TO:

RUNWAY (runway number),

or

(airport name) AIRPORT, RUNWAY (runway number),

or

(airport name) AIRPORT/HELIPORT.

2. For surveillance approaches, specify the location of the MAP in relation to the runway/airport/heliport.

PHRASEOLOGY–
MISSED APPROACH POINT IS (distance) MILE(S) FROM RUNWAY/AIRPORT/HELIPORT,

or for a point-in-space approach,

A MISSED APPROACH POINT (distance) MILE(S) (direction from landing area) OF (airport name) AIRPORT/HELIPORT.

EXAMPLE–
Helicopter point-in-space approach:

"Army copter Zulu Two, this will be a surveillance approach to a missed approach point, three point five miles south of Creedon Heliport."

REFERENCE–
FAAO JO 7110.65, Para 5–12–10, Elevation Failure.

c. Inform an aircraft making an approach to an airport not served by a tower that no traffic or landing runway information is available for that airport.

PHRASEOLOGY–
NO TRAFFIC OR LANDING RUNWAY INFORMATION AVAILABLE FOR THE AIRPORT.

REFERENCE–
FAAO JO 7110.65, Para 2–7–2, Altimeter Setting Issuance Below Lowest Usable FL.
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.

5–10–3. NO-GYRO APPROACH

When an aircraft will make a no-gyro surveillance or a PAR approach:

a. Before issuing a vector, inform the aircraft of the type of approach.

PHRASEOLOGY–
THIS WILL BE A NO-GYRO SURVEILLANCE/P–A–R APPROACH.

b. Instruct the aircraft when to start and stop turn.

PHRASEOLOGY–
TURN LEFT/RIGHT. STOP TURN.

c. After turn on to final approach has been made and prior to the aircraft reaching the approach gate, instruct the aircraft to make half-standard rate turns.

PHRASEOLOGY–
MAKE HALF-STANDARD RATE TURNS.

REFERENCE–
FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.
FAAO JO 7110.65, Para 5–12–10, Elevation Failure.

5–10–4. LOST COMMUNICATIONS

When weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach, take the following action as soon as possible after establishing radar identification and radio communications (may be omitted after the first approach when successive approaches are made and the instructions remain the same):

NOTE–
Air traffic control facilities at U.S. Army and U.S. Air Force installations are not required to transmit lost communications instructions to military aircraft. All military facilities will issue specific lost communications instructions to civil aircraft when required.

a. If lost communications instructions will require the aircraft to fly on an unpublished route, issue an appropriate altitude to the pilot. If the lost communications instructions are the same for both pattern and final, the pattern/vector controller must issue both. Advise the pilot that if radio communications are lost for a specified time interval (not more than 1 minute) on vector to final approach, 15 seconds on a surveillance final approach, or 5 seconds on a PAR final approach to:

1. Attempt contact on a secondary or a tower frequency.

2. Proceed in accordance with visual flight rules if possible.

3. Proceed with an approved nonradar approach, or execute the specific lost communications procedure for the radar approach being used.

NOTE–
The approved procedures are those published on the FAA Forms 8260 or applicable military document.

Section 3. Initial Separation of Departing and Arriving Aircraft

6–3–1. SEPARATION MINIMA

Separate a departing aircraft from an arriving aircraft making an instrument approach to the same airport by using one of the following minima until vertical or lateral separation is achieved:

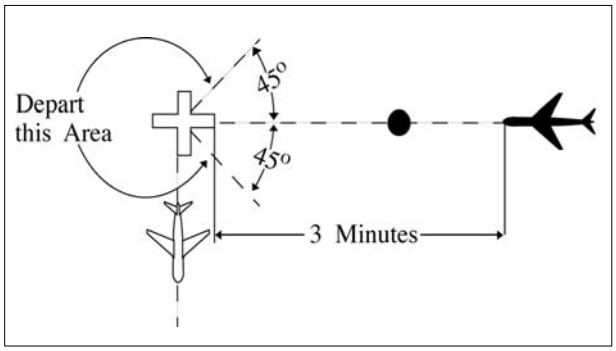
a. *TERMINAL.* When takeoff direction differs by at least 45 degrees from the reciprocal of the final approach course, the departing aircraft takes off before the arriving aircraft leaves a fix inbound not less than *4 miles* from the airport.

b. *TERMINAL.* When takeoff direction is other than in subpara a, the departing aircraft takes off so that it is established on a course diverging by at least 45 degrees from the reciprocal of the final approach course before the arriving aircraft leaves a fix inbound not less than *4 miles* from the airport.

c. *TERMINAL.* When the absence of an appropriate fix precludes the application of subparas a or b and at airports where approach control service is not provided, the separation in subparas d or e must be applied.

d. When takeoff direction differs by at least 45 degrees from the reciprocal of the final approach course, the departing aircraft takes off *3 minutes* before the arriving aircraft is estimated at the airport. (See FIG 6–3–1.)

FIG 6–3–1
Separation Minima



e. When takeoff direction is other than in subpara c, the departing aircraft takes off so that it is established on a course diverging by at least 45 degrees from the reciprocal of the final approach course *5 minutes* before the arriving aircraft is estimated at the airport or before it starts procedure turn. (See FIG 6–3–2 and FIG 6–3–3.)

FIG 6–3–2
Separation Minima

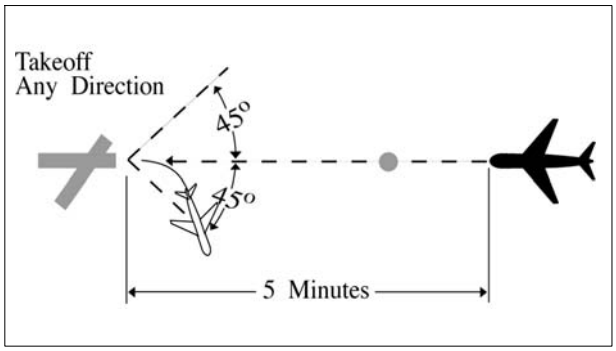
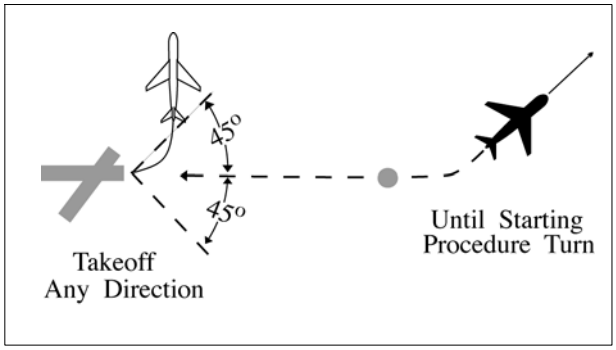


FIG 6–3–3
Separation Minima



Section 2. Visual Separation

7–2–1. VISUAL SEPARATION

Visual separation may be applied when other approved separation is assured before and after the application of visual separation. To ensure that other separation will exist, consider aircraft performance, wake turbulence, closure rate, routes of flight, known weather conditions, and aircraft position. Weather conditions must allow the aircraft to remain within sight until other separation exists.

REFERENCE–
FAAO JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.
FAAO JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.
FAAO JO 7110.65, Para 5–9–5, Approach Separation Responsibility.
FAAO JO 7110.65, Para 7–4–1, Visual Approach.
FAAO JO 7110.65, Para 7–4–2, Vectors for Visual Approach.
FAAO JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
P/CG Term– Visual Approach.
P/CG Term– Visual Separation.

a. TERMINAL. Visual separation may be applied between aircraft up to but not including FL180 under the following conditions:

1. Tower-applied visual separation.

(a) Maintain communication with at least one of the aircraft involved or ensure there is an ability to communicate immediately with applicable military aircraft as prescribed in Paragraph 3-9-3, Departure Control Instructions, subparagraph a2.

(b) The tower visually observes the aircraft, issues timely traffic advisories, and provides visual separation between the aircraft.

(c) Issue control instructions as necessary to ensure continued separation between the applicable aircraft.

(d) Do not apply visual separation between successive departures when departure routes and/or aircraft performance preclude maintaining separation.

(e) The use of tower-applied visual separation is not authorized when wake turbulence separation is required.

(f) Adjacent airports with operating ATCTs are not authorized to apply visual separation between their traffic and the other ATCT's traffic.

2. Pilot-applied visual separation.

(a) Maintain communication with at least one of the aircraft involved and ensure there is an ability to communicate with the other aircraft.

(b) The pilot sees another aircraft and is instructed to maintain visual separation from the aircraft as follows:

(1) Tell the pilot about the other aircraft. Include position, direction, type, and, unless it is obvious, the other aircraft's intention.

(2) Obtain acknowledgment from the pilot that the other aircraft is in sight.

(3) Instruct the pilot to maintain visual separation from that aircraft.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information).

If required,
(ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT?

If the pilot reports traffic in sight, or the answer is in the affirmative,

(ACID), MAINTAIN VISUAL SEPARATION

NOTE–
Towers must use the procedures contained in Paragraph 3-1-6, Traffic Information, Subparagraph b or c, as appropriate.

(c) If the pilot reports the traffic in sight and will maintain visual separation from it (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

PHRASEOLOGY–
(ACID), APPROVED.

NOTE–
Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.

REFERENCE–
FAAO JO 7110.65, Para 5-4-5, Transferring Controller Handoff

(d) If aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), HAS YOU IN SIGHT AND WILL MAINTAIN VISUAL SEPARATION.

(e) Advise the pilots if the targets appear likely to merge.

NOTE–
Issue this advisory in conjunction with the instruction to maintain visual separation, the advisory to the other aircraft of the converging course, or thereafter if the controller subsequently becomes aware that the targets are merging.

EXAMPLE–
"Targets appear likely to merge."

(f) Control of aircraft maintaining visual separation may be transferred to an adjacent position/sector/facility. Coordination procedures must be specified in an LOA or facility directive.

REFERENCE–
FAAO JO 7210.3, Para 4-3-1, Letters of Agreement

b. *EN ROUTE.* Visual separation may be used up to but not including FL 180 when the following conditions are met:

1. Direct communication is maintained with one of the aircraft involved and there is an ability to communicate with the other.

2. A pilot sees another aircraft and is instructed to maintain visual separation from it as follows:

(a) Tell the pilot about the other aircraft including position, direction, and type. If it is not obvious, include the other aircraft's intentions.

REFERENCE–
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.

(b) Obtain acknowledgment from the pilot that the other aircraft is in sight.

(c) Instruct the pilot to maintain visual separation from that aircraft.

PHRASEOLOGY–
(ACID), TRAFFIC, (clock position and distance), (direction) BOUND, (type of aircraft), (intentions and other relevant information). If required, (ACID), REPORT TRAFFIC IN SIGHT or DO YOU HAVE IT IN SIGHT? If the pilot reports traffic in sight, or the answer is in the affirmative, (ACID), MAINTAIN VISUAL SEPARATION

(d) If the pilot reports the traffic in sight and will maintain visual separation (the pilot must state both), the controller may "approve" the operation instead of restating the instructions.

PHRASEOLOGY–
(ACID), APPROVED.

NOTE–
Pilot-applied visual separation between aircraft is achieved when the controller has instructed the pilot to maintain visual separation and the pilot acknowledges with their call sign or when the controller has approved pilot-initiated visual separation.

(e) 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–
FAAO JO 7110.65, Para 7–4–1, Visual Approach.
FAAO JO 7110.65, Para 7–4–2, Vectors for Visual Approach.

(g) Advise the pilots if either aircraft is a heavy.

(h) Issue wake turbulence cautionary advisories in accordance with para 2–1–20.

c. Nonapproach control towers may be authorized to provide visual separation between aircraft within surface areas or designated areas when approved separation is provided before and after the application of visual separation. The nonapproach control tower must apply the procedures contained in subparagraph a1 or a2, when applying visual separation.

PHRASEOLOGY–
VISUAL SEPARATION APPROVED BETWEEN (ACID) AND (ACID),

and for departing aircraft,

(departing/succeeding aircraft) (ACID), RELEASED.

d. If the nonapproach control tower controller states to the radar controller that they will provide visual separation between arrivals, departures/arrivals and/or successive departures, and states the call signs of all aircraft involved, the radar controller can approve the application of visual separation as requested.

PHRASEOLOGY–

VISUAL SEPARATION APPROVED and for departing/succeeding aircraft, (ACIDs) RELEASED

NOTE–

A nonapproach control tower by accepting authorization for visual separation becomes responsible for ensuring that separation. Separation of IFR aircraft before and after application of visual separation is an IFR control function that must be applied by the Approach/Departure/En Route facility. Separation requirements also apply to VFR aircraft when IFR, Class B, Class C or TRSA separation services are required.

REFERENCE–

FAAO JO 7110.65, Para 4–8–11, Practice Approaches.
FAAO JO 7110.65, Para 5–6–1, Application.
FAAO JO 7110.65, Para 7–4–2, Vectors for Visual Approach.
FAAO JO 7110.65, Para 7–6–1, Application.
FAAO JO 7110.65, Para 7–7–1, Application.
FAAO JO 7110.65, Para 7–7–2, Issuance of EFC.
FAAO JO 7110.65, Para 7–7–3, Separation.
FAAO JO 7110.65, Para 7–7–4, Helicopter Traffic.
FAAO JO 7110.65, Para 7–7–5, Altitude Assignments.
FAAO JO 7110.65, Para 7–7–6, Approach Interval.
FAAO JO 7110.65, Para 7–7–7, TRSA Departure Information.
FAAO JO 7110.65, Para 7–8–2, Class C Services.
FAAO JO 7110.65, Para 7–8–3, Separation.
FAAO JO 7110.65, Para 7–8–4, Establishing Two–Way Communications.
FAAO JO 7110.65, Para 7–8–5, Altitude Assignments.
FAAO JO 7110.65, Para 7–8–6, Exceptions.
FAAO JO 7110.65, Para 7–9–1, Application.
FAAO JO 7110.65, Para 7–9–3, Methods.
FAAO JO 7110.65, Para 7–9–4, Separation.
FAAO JO 7110.65, Para 7–9–6, Helicopter Traffic.
FAAO JO 7110.65, Para 7–9–7, Altitude Assignments.

Section 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 para 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 para 5–6–1, Application, and para 5–6–2, Methods.

REFERENCE–
FAAO JO 7110.65, Para 2–1–16, Surface Areas.
FAAO JO 7110.65, Para 7–6–1, Application.
FAAO JO 7210.3, Chapter 11, 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 para 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–
FAAO 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 g and h.

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.

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 ARTS/STARS track data is being displayed on the tower's BRITE/DBRITE/TDW display, the aircraft is tagged by ARTS/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 para 2–1–21, Traffic Advisories, after the departure is radar identified.

NOTE–
Departing aircraft desiring traffic information are expected to request the service and to state their proposed direction of flight upon initial contact with ground control.

7–6–11. TERMINATION OF SERVICE

Basic radar services should be provided to the extent possible, workload permitting. Terminate radar service to aircraft landing at airports other than those where sequencing service is provided at a sufficient distance from the airport to permit the pilot to change to the appropriate frequency for traffic and airport information.

PHRASEOLOGY–
RADAR SERVICE TERMINATED, SQUAWK ONE TWO ZERO ZERO,

or

SQUAWK VFR,

then

CHANGE TO ADVISORY FREQUENCY APPROVED,

or

CONTACT (frequency identification),

or

FREQUENCY CHANGE APPROVED.

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–
FAAO 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–
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

7–7–3. SEPARATION

Separate VFR aircraft from VFR/IFR aircraft by any one of the following:

a. Visual separation, as specified in para 7–2–1, Visual Separation, para 7–4–2, Vectors for Visual Approach, and para 7–6–7, Sequencing.

NOTE–
Issue wake turbulence cautionary advisories in accordance with para 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–
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

7–7–4. HELICOPTER TRAFFIC

Helicopters need not be separated from other helicopters. Traffic information must be exchanged, as necessary.

REFERENCE–
FAAO 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–
FAAO JO 7110.65, Para 4–5–2, Flight Direction.
FAAO JO 7110.65, Para 4–5–3, Exceptions.
FAAO JO 7110.65, Para 4–5–6, Minimum En Route Altitudes.

b. If required, issue altitude assignments, consistent with the provisions of 14 CFR Section 91.119.

NOTE–
The MSAs are:
1. *Over congested areas, an altitude at least 1,000 feet above the highest obstacle; and*

2. *Over other than congested areas, an altitude at least 500 feet above the surface.*

c. When necessary to assign an altitude for separation purposes to VFR aircraft contrary to 14 CFR Section 91.159, advise the aircraft to resume altitudes appropriate for the direction of flight when the altitude assignment is no longer needed for separation or when leaving the TRSA.

PHRASEOLOGY–
RESUME APPROPRIATE VFR ALTITUDES.

REFERENCE–
FAAO JO 7110.65, Para 4–8–11, Practice Approaches.
FAAO JO 7110.65, Para 5–6–1, Application.
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

7–7–6. APPROACH INTERVAL

The tower must specify the approach interval.

REFERENCE–
FAAO 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 VFR participating 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–
FAAO 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–
FAAO 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–
FAAO 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 para 7–2–1, Visual Separation, para 7–4–2, Vectors for Visual Approach, and para 7–6–7, Sequencing.

NOTE–
Issue wake turbulence cautionary advisories in accordance with para 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–
FAAO 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–
FAAO 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–
FAAO JO 7110.65, Para 7–2–1, Visual Separation.

7–8–6. EXCEPTIONS

a. VFR helicopters need not be separated from IFR helicopters. 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 7. North Atlantic ICAO Region

8–7–1. APPLICATION

Provide air traffic control services in the North Atlantic ICAO Region with the procedures and minima contained in this section except when noted otherwise.

8–7–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

8–7–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

a. Supersonic flight:

1. *10 minutes* provided that:

(a) both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

(1) The aircraft concerned have reported over a common point; or,

(2) If the aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

(3) If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

2. *15 minutes* between aircraft in supersonic flight not covered in subpara a1 above.

b. Turbojet operations *(subsonic flight)*:

1. Apply the prescribed minima in accordance with para 8–3–3, Mach Number Technique; or

2. Where tracks diverge from the common point and the following aircraft is maintaining a greater Mach Number than the preceding aircraft:

(a) At least *10 minutes* longitudinal separation exists at the point where the tracks diverge; and

(b) At least *5 minutes* longitudinal separation will exist where minimum lateral separation is achieved *(whichever is estimated to occur first)*;

(1) At or before the next significant point (normally within ten degrees of longitude along track(s)), or

(2) Within 90 minutes of the time the following aircraft passes the common point, or

(3) Within 600 NM of the common point.

3. Apply *15 minutes* between all other turbojet aircraft.

c. Nonturbojet operations:

1. Apply *20 minutes* between aircraft operating in the West Atlantic Route System (WATRS), or

2. Apply *30 minutes* between aircraft operating outside of the WATRS.

NOTE–
The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.

d. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;

2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

4. Both the ITP aircraft and reference aircraft are either on:

(a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

NOTE–
Same identical tracks are where the angular difference is zero degrees.

5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;

7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.

NOTE–
ATOP is designed to check for the above criteria prior to allowing the minima to be provided.

e. Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C):

1. Apply the minima as specified in TBL 8-7-1 between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

(a) Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

(b) The required ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

FIG 8–7–1
ADS–C Criteria

Minima	RNP	Maximum ADS-C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	10 minutes

2. Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

(a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

(b) The aircraft have passed each other by the applicable separation minimum.

NOTE–
ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

8–7–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. *30 NM* to RNP-4 approved aircraft operating within airspace designated for RNP-4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS-C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

b. *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft which:

1. Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR; or

2. Operate in the New York Oceanic CTA/FIR outside of WATRS.

NOTE–
This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.

c. *60 NM or 1 degree latitude* between:

1. Supersonic aircraft operating above FL 275.

2. Aircraft which have MNPS or NAT HLA authorization and which:

(a) Operate within NAT HLA; or

(b) Are in transit to or from NAT HLA; or

(c) Operate for part of their flight within, above, or below NAT HLA**.**

NOTE–
This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.

d. *90 NM or 1 and 1/2 degrees latitude* between aircraft not approved for RNP 4 or RNP 10 and which:

1. Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami CTA/FIR;

2. Operate between points in the U.S. or Canada, and Bermuda;

3. Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

e. *120 NM or 2 degrees latitude* between aircraft not covered by subparas a, c or d above.

NOTE–
Tracks may be spaced with reference to their difference in latitude, provided that in any interval of 10 degrees of longitude the change in latitude of at least one of the tracks does not exceed 3 degrees when operating south of 58°North.

8–7–5. PROCEDURES FOR WEATHER DEVIATIONS IN NORTH ATLANTIC (NAT) AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish the required separation, ATC must:

a. Advise the pilot unable to issue clearance for requested deviation;

b. Advise the pilot of conflicting traffic; and

c. Request pilot's intentions.

PHRASEOLOGY–
UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), ADVISE INTENTIONS.

NOTE–
1. *The pilot will advise ATC of intentions by the most expeditious means available.*

2. *In the event that pilot/controller communications cannot be established or a revised ATC clearance is not available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc. 7030.*

Section 8. Caribbean ICAO Region

8–8–1. APPLICATION

Provide air traffic control services in the Caribbean ICAO Region with the procedures and minima contained in this section except when noted otherwise.

8–8–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

8–8–3. LONGITUDINAL SEPARATION

Provide longitudinal separation between aircraft as follows:

a. Supersonic flight:

1. *10 minutes* provided both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

(a) Both aircraft have reported over a common point; or,

(b) If both aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

(c) If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

2. *15 minutes* between all other aircraft.

b. Turbojet operations at or above FL 200 in the Miami Oceanic, Houston Oceanic and San Juan CTAs/FIRs and all altitudes in the West Atlantic Route System (WATRS) and New York Oceanic CTA/FIR *(subsonic flight)*:

1. Apply the prescribed minima in accordance with para 8–3–3, Mach Number Technique; or

2. In the New York CTA/FIR, where tracks diverge from the common point and the following aircraft is maintaining a greater Mach number than the preceding aircraft:

(a) At least *10 minutes* longitudinal separation exists at the point where the tracks diverge; and

(b) At least *5 minutes* longitudinal separation will exist where minimum lateral separation is achieved *(whichever is estimated to occur first)*;

(1) At or before the next significant point (normally within ten degrees of longitude along track(s)), or

(2) Within *90 minutes* of the time the following aircraft passes the common point, or

(3) Within *600 NM* of the common point; or

3. Apply *15 minutes* between all other turbojet aircraft.

c. Turbojet operations below FL 200 *(subsonic flight)*:

Apply *20 minutes* between turbojet aircraft operating below FL 200 in the San Juan Oceanic *(outside the WATRS area)*, Miami Oceanic and Houston Oceanic CTAs/FIRs.

d. Nonturbojet operations.

1. Apply *20 minutes* between aircraft operating in the WATRS; or

2. Apply *20 minutes* between aircraft operating below FL 200 in the Miami Oceanic, Houston Oceanic and San Juan CTAs/FIRs; or

3. Apply *30 minutes* between aircraft operating outside of the WATRS in the New York CTA/FIR.

NOTE–
The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.

e. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;

2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

4. Both the ITP aircraft and reference aircraft are either on:

(a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

NOTE–
Same identical tracks are where the angular difference is zero degrees.

5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;

7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.

NOTE–
ATOP is designed to check for the above criteria prior to allowing the minima to be provided.

f. Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C):

1. Apply the minima as specified in TBL 8-8-1 between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

(a) Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

(b) The required ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP).

FIG 8–8–1
ADS–C Criteria

Minima	RNP	Maximum ADS-C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	10 minutes

2. Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

(a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

(b) The aircraft have passed each other by the applicable separation minimum.

NOTE–
ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

8–8–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. *30 NM* to RNP-4 approved aircraft operating within airspace designated for RNP-4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS-C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

b. *50 NM* between Required Navigation Performance (RNP 4 or RNP 10) approved aircraft which:

1. Operate on routes or in areas within WATRS, the San Juan CTA/FIR or the Atlantic portion of the Miami Oceanic CTA/FIR; or

2. Operate in the New York Oceanic CTA/FIR outside of WATRS; or

3. Operate in the Houston Oceanic CTA/FIR or the Gulf of Mexico portion of the Miami CTA/FIR.

NOTE–
This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.

c. *60 NM* between:

1. Supersonic aircraft operating above FL 275 within the New York oceanic CTA/FIR.

2. Supersonic aircraft operating at or above FL 450 not covered in subpara 1 above.

3. Aircraft which have MNPS or NAT HLA authorization and which:

(a) Operate within NTA HLA; or

(b) Are in transit to or from NAT HLA; or

(c) Operate for part of their flight within, above, or below NAT HLA.

NOTE–
This reduced lateral separation must not be used if track–keeping capability of the aircraft has been reduced for any reason.

d. *90 NM* between aircraft not approved for RNP 4 or RNP 10 and which:

1. Operate within *WATRS*; or

2. Operate west of 55° West between the U.S., Canada, or Bermuda and points in the Caribbean ICAO Region.

e. *100 NM* between aircraft operating west of 55° West not covered by subparas a, c or d above.

f. *120 NM* between aircraft operating east of 55° West.

8–8–5. VFR CLIMB AND DESCENT

a. In the Houston, Miami, and San Juan CTAs, IFR flights may be cleared to climb and descend in VFR conditions only:

1. When requested by the pilot; and

2. Between sunrise and sunset.

b. Apply the following when the flight is cleared:

1. If there is a possibility that VFR conditions may become impractical, issue alternative instructions.

2. Issue traffic information to aircraft that are not separated in accordance with the minima in this section.

Section 9. Pacific ICAO Region

8–9–1. APPLICATION

Provide air traffic control services in the Pacific ICAO Region with the procedures and minima contained in this section except when noted otherwise.

8–9–2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification, except when aircraft operate within airspace where composite separation and procedures are authorized, apply the minima specified in para 8–9–5, Composite Separation Minima.

8–9–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

a. Minima based on time:

1. *15 minutes* between aircraft; or

2. *10 minutes* between turbojet aircraft whether in level, climbing or descending flight, provided that the aircraft concerned follow the same track or continuously diverging tracks until some other form of separation is provided; or

3. The prescribed minima in accordance with para 8–3–3, Mach Number Technique.

4. Reciprocal track aircraft – Where lateral separation is not provided, vertical separation must be provided at least *10 minutes* before and after the time the aircraft are estimated to pass or are estimated to have passed.

b. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;

2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

4. Both the ITP aircraft and reference aircraft are either on:

(a) Same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

NOTE–
Same identical tracks are where the angular difference is zero degrees.

5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;

7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.

NOTE–
ATOP is designed to check for the above criteria prior to allowing the minima to be provided.

c. Minima based on distance using Automatic Dependent Surveillance – Contract (ADS–C):

1. Apply the minima as specified in TBL 8–9–1, ADS–C Criteria, between aircraft on the same track within airspace designated for Required Navigation Performance (RNP), provided:

(a) Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

(b) The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (e.g., ATOP);

TBL 8–9–1
ADS–C Criteria

Minima	RNP	Maximum ADS–C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	14 minutes

2. Aircraft on reciprocal tracks may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided that:

(a) An ADS–C position report on at least one of the aircraft has been received beyond the passing point, and

(b) The aircraft have passed each other by the applicable separation minimum.

NOTE–
ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS–C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS–C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

d. Minima based on distance *without* ADS–C:

1. Apply *50 NM* between aircraft cruising, climbing or descending on the same track or reciprocal track that meet the requirements for and are operating within airspace designated for RNP–10 operations provided:

(a) Direct controller/pilot communication via voice or CPDLC is maintained; and

(b) Separation is established by ensuring that at least *50 NM* longitudinal separation minima exists between aircraft positions as reported by reference to the same waypoint.

(1) *Same track aircraft* – whenever possible ahead of both; or

(2) *Reciprocal track aircraft* – provided that it has been positively established that the aircraft have passed each other.

2. Distance verification must be obtained from each aircraft at least every *24 minutes* to verify that separation is maintained.

3. If an aircraft fails to report its position within *3 minutes* after the expected time, the controller must take action to establish communication. If communication is not established within *8 minutes* after the time the report should have been received, the controller must take action to apply another form of separation.

NOTE–
When same track aircraft are at, or are expected to reduce to, the minima, speed control techniques should be applied in order to maintain the required separation.

e. Minima based on DME/RNAV:

Apply the following DME/RNAV minima in Control 1234H, Control 1487H and the Norton Sound High Control areas to turbojet aircraft established on or transitioning to the North Pacific (NOPAC) Route System.

1. *30 NM* between aircraft when DME reports or radar observations are used to establish the distance, otherwise at least *40 NM* based on RNAV must be applied; and

2. Unless both aircraft are radar identified, both aircraft must provide DME/RNAV distance reports via direct voice that indicates the appropriate separation exists; and

3. Application of DME/RNAV separation without direct voice communications may not continue for more than *90 minutes;* and

4. The preceding aircraft is assigned the same or greater Mach number than the following aircraft; and

5. Both aircraft must be advised of the other aircraft involved, including the distance relative to the flights.

EXAMPLE–
"Maintain Mach point eight four, same direction traffic, twelve o'clock, three five miles."

REFERENCE–
FAAO JO 7110.65, Para 2–1–21, Traffic Advisories.

8–9–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. Within areas where Required Navigation Performance 10 (RNP–10) separation and procedures are authorized, apply *50 NM* to RNP–10 approved aircraft.

b. Apply *30 NM* to RNP–4 approved aircraft operating within airspace designated for RNP–4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (e.g., ATOP).

c. When aircraft operate within airspace where composite separation and procedures are authorized, apply the minimum specified in para 8–9–5, Composite Separation Minima.

d. Apply *100 NM* to aircraft not covered by subparas a, b or c.

8–9–5. COMPOSITE SEPARATION MINIMA

Provide composite separation within the Central East Pacific (CEP) and North Pacific (NOPAC) composite route systems and where designated by facility directive in the Pacific Organized Track System (PACOTS) at and above FL 290 as follows:

a. *1,000 feet* vertical separation; and

b. *50 NM* lateral separation.

8–9–6. COMPOSITE SEPARATION ALTITUDE ASSIGNMENT

a. Aircraft operating at or above FL 300 in a composite route system may be cleared at even flight levels. Additionally, aircraft may be cleared at even flight levels while joining, crossing, or leaving a composite route system provided such aircraft leaving the system are cleared to an appropriate odd cardinal flight level when noncomposite vertical or lateral separation is achieved.

b. Aircraft (operating at or above FL 300) leaving a composite route system at an even cardinal flight level do not have to be assigned an odd cardinal flight level provided:

1. The aircraft is being provided radar service; and

2. The aircraft will be cleared for descent and approach to an airport within the facility's domestic FIR; and

3. There is an operational advantage.

c. Aircraft operating on unidirectional routes or traffic flows may be assigned altitudes other than the appropriate altitude for direction of flight provided that 2,000 feet vertical separation is maintained between aircraft operating on the same route.

8–9–7. COMPOSITE SEPARATION APPLICATION

Provide composite separation in the CEP and the North Pacific (NOPAC) composite route systems and

where designated by facility directive in the Pacific Organized Track System (PACOTS) as follows:

a. Clear an aircraft to join an outer route of the composite route system at other than the normal entry point provided:

1. Longitudinal or noncomposite vertical separation exists between that aircraft and any other aircraft on that route; and

2. Composite separation exists between that aircraft and any other aircraft on the next adjacent route.

b. Clear an aircraft to leave an outer route of the composite route system at other than the normal exit point provided its course diverges so that lateral spacing from the route system increases until noncomposite separation exists between that aircraft and any other aircraft in the composite route system.

c. Clear an aircraft to change from one route to an adjacent route within the composite route system provided:

1. Longitudinal or noncomposite vertical separation is maintained between that aircraft and any other aircraft on the route being vacated until that aircraft is established on the route to which it is proceeding; and

2. Longitudinal or noncomposite vertical separation exists between that aircraft and any other aircraft on the route to which that aircraft is proceeding; and

3. Composite separation exists between that aircraft and any other aircraft on the next adjacent route.

d. Clear an aircraft to cross the composite route system provided longitudinal or noncomposite vertical or lateral separation exists between that aircraft and any other aircraft in the composite route system.

e. Clear aircraft to transition to or from the composite route system from an Oceanic Transition Route (OTR) provided:

1. The OTR is charted on aeronautical charts; and

2. Composite separation is maintained between that aircraft and any other aircraft within the composite route system; and

NOTE–
An aircraft is within the confines of a composite route system when the aircraft joins or crosses the outer route of the composite route system or passes a composite route entry point.

3. Composite separation is maintained between that aircraft and any other aircraft on adjacent OTRs.

f. Clear an aircraft to change altitude on a route if noncomposite separation exists between that aircraft and others operating on that route regardless of other aircraft operating on adjacent routes in the system. Pilot's discretion climbs and descents are not authorized when applying composite separation.

NOTE–
Although composite separation is not applied between aircraft on different tracks at FL 280 and FL 290, this paragraph applies to climbs and descents between FL 280 and altitudes within the composite altitude stratum (FL 300 and above).

8–9–8. PROCEDURES FOR WEATHER DEVIATIONS AND OTHER CONTINGENCIES IN OCEANIC CONTROLLED AIRSPACE

Aircraft must request an ATC clearance to deviate. Since aircraft will not fly into known areas of weather, weather deviation requests should take priority over routine requests. If there is no traffic in the horizontal dimension, ATC must issue clearance to deviate from track; or if there is conflicting traffic in the horizontal dimension, ATC separates aircraft by establishing vertical separation. If there is conflicting traffic and ATC is unable to establish approved separation, ATC must:

a. Advise the pilot unable to issue clearance for requested deviation;

b. Advise the pilot of conflicting traffic; and

c. Request pilot's intentions.

PHRASEOLOGY–
UNABLE (requested deviation), TRAFFIC IS (call sign, position, altitude, direction), SAY INTENTIONS.

NOTE–
1. *The pilot will advise ATC of intentions by the most expeditious means available.*

2. *In the event that pilot/controller communications cannot be established or a revised AT clearance is not*

available, pilots will follow the procedures outlined in the Regional Supplementary Procedures, ICAO Doc 7030 and Chart Supplements.

Section 10. North American ICAO Region

8–10–1. APPLICATION

Provide air traffic control services in the North American ICAO Region with the procedures and minima contained in this section.

8–10–2. VERTICAL SEPARATION

Provide vertical separation in accordance with:

a. Chapter 4, IFR, Section 5, Altitude Assignment and Verification; and

b. Facility directives depicting the transition between flight levels and metric altitudes.

8–10–3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

a. Minima based on time:

1. *15 minutes* between turbojet aircraft.

2. The prescribed minima in accordance with Paragraph 8–3–3, Mach Number Technique.

3. *20 minutes* between other aircraft.

b. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;

2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

4. Both the ITP aircraft and reference aircraft are either on:

(a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

NOTE–
Same identical tracks are where the angular difference is zero degrees.

5. No speed or route change clearance shall be issued to the ITP aircraft until the ITP climb or descent is completed;

6. The altitude difference between the ITP aircraft and any reference aircraft shall be 2000 ft or less;

7. No instruction to amend speed, altitude or route shall be issued to any reference aircraft until the ITP climb or descent is completed;

8. The maximum closing speed between the ITP aircraft and each reference aircraft shall be Mach 0.06; and

9. The ITP aircraft shall not be a reference aircraft in another ITP clearance.

NOTE–
ATOP is designed to check for the above criteria prior to allowing the minima to be provided.

c. Minima based on distance using Automatic Dependent Surveillance – Contract (ADS-C) in the Anchorage Oceanic and Anchorage Continental CTAs only:

NOTE–
The minima described in this paragraph are not applicable within airspace in the Anchorage Arctic CTA.

1. Apply the minima as specified in TBL 8-10-1 between aircraft on the same track within airspace in the Anchorage Oceanic and Anchorage Continental CTAs designated for Required Navigation Performance (RNP), provided:

(a) Direct controller/pilot communication via voice or Controller Pilot Data Link Communications (CPDLC) is established, and

(b) The required ADS-C periodic reports are maintained and monitored by an automated flight data processor (for example, ATOP). ■

TBL 8–10–1
ADS–C Criteria

Minima	RNP	Maximum ADS–C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	10 minutes

2. Aircraft on reciprocal tracks in the Anchorage Oceanic and Anchorage Continental CTAs may be cleared to climb or descend to or through the altitude(s) occupied by another aircraft provided:

(a) (a) An ADS-C position report on at least one of the aircraft has been received beyond the passing point, and

(b) (b) The aircraft have passed each other by the applicable separation minimum.

NOTE–
ATOP has been designed to check for the above criteria prior to allowing the minima to be provided.

3. When an ADS-C periodic or waypoint change event report is overdue by *3 minutes*, the controller must take action to obtain an ADS-C report.

4. If no report is received within *6 minutes* of the time the original report was due, the controller must take action to apply another form of separation.

5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:

(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS–C demand reports and the ATOP software is used to ensure the following conditions are met;

(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:

(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or

(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft.

(c) The altitude difference between aircraft is not more than 2000 ft;

(d) The clearance is for a climb or descent of 4000 ft or less;

(e) Both aircraft are filed as single flights not flying in formation with other aircraft;

(f) Both aircraft are in level flight at a single altitude;

(g) Both aircraft are same direction;

(h) Neither aircraft are on a weather deviation;

(i) Neither aircraft have an open CPDLC request for a weather deviation;

(j) Neither aircraft are on an offset with a rejoin clearance; and

(k) The clearance is issued with a restriction that ensures vertical separation is re–established within 15 minutes from the first demand report request.

8–10–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. *50 NM* to RNP–10 approved aircraft within areas where RNP–10 separation and procedures are authorized,

b. *30 NM* to RNP–4 approved aircraft operating within the Anchorage Oceanic CTA and Anchorage Continental CTA when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (for example, ATOP).

NOTE–
The minimum described in subparagraph b is not applicable within airspace in the Anchorage Arctic CTA.

c. *90 NM* to aircraft not covered by subparagraphs a or b.

NOTE–
Volcanic ash clouds are not normally detected by airborne or air traffic radar systems.

b. If advised by an aircraft that it has entered a volcanic ash cloud and indicates that a distress situation exists:

1. Consider the aircraft to be in an emergency situation.

2. Do not initiate any climb clearances to turbine–powered aircraft until the aircraft has exited the ash cloud.

3. Do not attempt to provide escape vectors without pilot concurrence.

NOTE–
1. *The recommended escape maneuver is to reverse course and begin a descent (if terrain permits). However, it is the pilot's responsibility to determine the safest escape route from the ash cloud.*

2. *Controllers should be aware of the possibility of complete loss of power to any turbine–powered aircraft that encounters an ash cloud.*

REFERENCE–
FAAO JO 7110.65, Para 10–2–4, Altitude Change for Improved Reception.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.

10–2–19. REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT

a. If an air traffic controller receives a report of the death of person, an illness, and/or other public health risk obtain the following information and notify the operations manager in charge (OMIC)/front line manager (FLM)/controller-in-charge (CIC) as soon as possible.

1. Call sign.

2. Number of suspected cases of illness on board.

3. Nature of the illnesses or other public health risk, if known.

4. Number of persons on board.

5. Number of deaths, if applicable.

6. Pilot's intent (for example, continue to destination or divert).

7. Any request for assistance (for example, needing emergency medical services to meet the aircraft at arrival).

b. The OMIC/FLM/CIC must relay the information to the DEN as soon as possible.

NOTE–
1. *If the ATC facility is not actively monitoring the DEN or does not have a dedicated line to the DEN, they must call into the DEN directly via (202) 267–4700 or (844) 432–2962 (toll free). Either phone number may be used to contact the DEN. Additionally, if these phone numbers are out of service, alternate back–up bridge phone numbers should be used to contact the DEN: (405) 225–2444 or (844) 663–9723 (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–
FAAO JO 7210.3, Para 2-1-29, REPORTING DEATH, ILLNESS, OR OTHER PUBLIC HEALTH RISK ON BOARD AIRCRAFT

Section 2. ATOP – Oceanic

The following procedures are applicable to the operation of the ATOP Oceanic Air Traffic Control (ATC) System.

13–2–1. DESCRIPTION

a. The ATOP ATC System is utilized in designated en route/oceanic airspace. ATOP includes both surveillance and flight data processing, which provides the controllers with automated decision support tools to establish, monitor and maintain separation between aircraft, and aircraft to airspace and terrain.

b. ATOP capabilities include:

1. MEARTS based radar surveillance processing.

2. Conflict Prediction and Reporting.

3. Automatic Dependent Surveillance–Broadcast (ADS–B).

4. Automatic Dependent Surveillance–Contract (ADS–C).

5. Controller Pilot Data Link Communications (CPDLC).

6. ATS Interfacility Data Communications (AIDC).

7. Additional Decision Support Tools used primarily for situational awareness.

8. Electronic Flight Data including Electronic Flight Strips.

13–2–2. CONFLICT DETECTION AND RESOLUTION

The controller must use the most accurate information available to initiate, monitor, and maintain separation.

a. Apply the following procedures in airspace where conflict probe is being utilized as a decision support tool:

1. Conflict Probe Results.

(a) Controllers must assume that the conflict probe separation calculations are accurate.

(b) Unless otherwise prescribed in subpara a3, controllers must utilize the results from conflict probe to initiate and maintain the prescribed separation minima.

2. Conflict Resolution.

(a) When a controller is alerted to a conflict, which will occur in his/her sector, take the appropriate action to resolve the conflict.

(b) The controller responsible for resolving a conflict must evaluate the alert and take appropriate action as early as practical, in accordance with duty priorities, alert priority, and operational considerations.

(c) Unless otherwise specified in facility directives, the controller must take immediate action to resolve any “red” conflicts.

3. Overriding Conflict Probe.

(a) Controllers must not override conflict probe except for the following situations:

(1) The application of a separation standard not recognized by conflict probe listed in subpara a8(a), or as identified by facility directive.

(2) When action has been taken to resolve the identified conflict and separation has been ensured, or

(3) Control responsibility has been delegated to another sector or facility, or

(4) Other situations as specified in facility directives.

(b) Controllers must continue to ensure that separation is maintained until the overridden conflict is resolved.

4. Use of Probe when Issuing Clearances. Utilize conflict probe results when issuing a clearance to ensure that any potential conflict has been given thorough consideration.

5. Use of Probe when Accepting Manual Transfers. Prior to manually accepting an aircraft transfer from an external facility ensure that the coordinated flight profile is accurately entered, conflict probe initiated and, if necessary, action is taken to resolve any potential conflicts.

6. Trial Probe. The controller can utilize trial probe to assess whether there are any potential conflicts with a proposed clearance or when performing manual coordination.

NOTE–
Once initiated, trial probe does not take into account any changes made to the proposed profile or to any other flight profile in the system. It is an assessment by conflict probe of the current situation at the time the controller enters the trial probe. A trial probe does not alleviate the controller from performing a conflict probe when issuing a clearance or accepting a transfer.

7. System Unable to Perform Conflict Probe for a Specific Aircraft.

(a) If a flight's profile becomes corrupted, conflict probe may not be able to correctly monitor separation for that flight. Take the necessary steps to correct an aircraft's flight plan when conflict probe could not be performed.

(b) In addition, after verifying flight plan data accuracy, utilize other decision support tools to establish and maintain the appropriate separation minima until such time that conflict probe can be utilized.

8. Conflict Probe Limitations.

(a) Conflict Probe does not support the following separation minima:

(1) Subpara 8–4–2a2 – Nonintersecting paths.

(2) Subpara 8–4–2d – Intersecting flight paths with variable width protected airspace.

(3) Subpara 8–4–3a – Reduction of Route Protected Airspace, below FL 240.

(4) Subpara 8–4–3b – Reduction of Route Protected Airspace, at and above FL 240.

(5) Subpara 8–4–4a1 – Same NAVAID: VOR/VORTAC/TACAN.

(6) Subpara 8–4–4a2 – Same NAVAID: NDB.

(7) Subpara 8–4–4c – Dead Reckoning.

(8) Para 8–5–4 – Same Direction.

(9) Para 8–8–5 – VFR Climb and Descent.

b. Additional Decision Support Tools: These support tools include: range/bearing, time of passing, intercept angle, the aircraft situation display (ASD) and electronic flight data.

1. The results provided by these additional decision support/controller tools can be used by the controller for maintaining situational awareness and monitoring flight profile information, and for establishing and maintaining separation standards not supported by probe, or when probe is unavailable.

2. Under no circumstances must the controller utilize any of the additional decision support tools to override probe results when the applicable separation standard is supported by probe and none of the other conditions for overriding probe apply.

13–2–3. INFORMATION MANAGEMENT

a. Currency of Information: The sector team is responsible for ensuring that manually entered data is accurate and timely. Ensure that nonconformant messages are handled in a timely manner and that the flight's profile is updated as necessary.

NOTE–
Conflict probe accuracy requires timely updates of data used to model each flight's trajectory. If this data is not current, the aircraft flight profile and probe results may be misleading.

b. Data Block Management.

1. Ensure that the data block reflects the most current flight information and controller applied indicators as specified in facility directives.

2. Ensure that appropriate and timely action is taken when a special condition code is indicated in the data block.

c. Electronic Flight Strip Management.

1. Electronic flight strips must be maintained in accordance with facility directives and the following:

(a) Annotations. Ensure that annotations are kept up to date.

(b) Reduced Separation Flags. Ensure the flags listed below are selected appropriately for each flight:

(1) M– Mach Number Technique (MNT).

(2) R– Reduced MNT.

(3) D– Distance–based longitudinal.

(4) W– Reduced Vertical Separation Minimum (RVSM).

(c) Degraded RNP. Select when an aircraft has notified ATC of a reduction in navigation capability that affects the applicable separation minima.

(d) Restrictions. Ensure restrictions accurately reflect the cleared profile.

d. Queue Management.

1. Manage all sector and coordination queues in accordance with the appropriate message priority and the controller's priority of duties.

2. In accordance with facility directives, ensure that the messages directed to the error queue are processed in a timely manner.

e. Window/List Management.

1. Ensure that the situation display window title bar is not obscured by other windows and/or lists.

NOTE–
The title bar changes color to denote when priority information on the ASD is being obscured or is out of view.

2. In accordance with facility directives, ensure that designated windows and/or lists are displayed at all times.

13–2–4. CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)

a. Means of communication.

1. When CPDLC is available and CPDLC connected aircraft are operating outside of VHF coverage, CPDLC must be used as the primary means of communication.

2. Voice communications may be utilized for CPDLC aircraft when it will provide an operational advantage and/or when workload or equipment capabilities demand.

3. When CPDLC is being utilized, a voice backup must exist (e.g., HF, SATCOM, Third party).

4. When a pilot communicates via CPDLC, the response should be via CPDLC.

5. To the extent possible, the CPDLC message set should be used in lieu of free text messages.

NOTE–
The use of the CPDLC message set ensures the proper "closure" of CPDLC exchanges.

b. Transfer of Communications to the Next Facility.

1. When the receiving facility is capable of CPDLC communications, the data link transfer is automatic and is accomplished within facility adapted parameters.

2. When a receiving facility is not CPDLC capable, the transfer of communications must be made in accordance with local directives and Letters of Agreement (LOAs).

c. Abnormal conditions.

1. If any portion of the automated transfer fails, the controller should attempt to initiate the transfer manually. If unable to complete the data link transfer, the controller should advise the pilot to log on to the next facility and send an End Service (EOS) message.

2. If CPDLC fails, voice communications must be utilized until CPDLC connections can be reestablished.

3. If the CPDLC connection is lost on a specific aircraft, the controller should send a connection request message (CR1) or advise the pilot via backup communications to log on again.

4. If CPDLC service is to be canceled, the controller must advise the pilot as early as possible to facilitate a smooth transition to voice communications. Workload permitting, the controller should also advise the pilot of the reason for the termination of data link.

5. When there is uncertainty that a clearance was delivered to an aircraft via CPDLC, the controller must continue to protect the airspace associated with the clearance until an appropriate operational response is received from the flight crew. If an expected operational response to a clearance is not received, the controller will initiate appropriate action to ensure that the clearance was received by the flight crew. On initial voice contact with aircraft preface the message with the following:

PHRASEOLOGY–
(Call Sign) CPDLC Failure, (message).

13–2–5. COORDINATION

In addition to the requirements set forth in Chapter 8, Offshore/Oceanic Procedures, Section 2, Coordination, automated coordination must constitute complete coordination between ATOP sectors, both internally and between sectors across adjacent ATOP facilities, except:

a. When the aircraft is in conflict with another in the receiving sector, or

b. When otherwise specified in facility directives or LOA.

13–2–6. TEAM RESPONSIBILITIES – MULTIPLE PERSON OPERATION

a. When operating in a multiple controller operation at a workstation, ensure all ATC tasks are completed according to their priority of duties.

b. Multiple controller operation must be accomplished according to facility directives.

PILOT/CONTROLLER GLOSSARY

PURPOSE

a. This Glossary was compiled to promote a common understanding of the terms used in the Air Traffic Control system. It includes those terms which are intended for pilot/controller communications. Those terms most frequently used in pilot/controller communications are printed in ***bold italics***. The definitions are primarily defined in an operational sense applicable to both users and operators of the National Airspace System. Use of the Glossary will preclude any misunderstandings concerning the system's design, function, and purpose.

b. Because of the international nature of flying, terms used in the Lexicon, published by the International Civil Aviation Organization (ICAO), are included when they differ from FAA definitions. These terms are followed by "[ICAO]." For the reader's convenience, there are also cross references to related terms in other parts of the Glossary and to other documents, such as the Code of Federal Regulations (CFR) and the Aeronautical Information Manual (AIM).

c. This Glossary will be revised, as necessary, to maintain a common understanding of the system.

EXPLANATION OF CHANGES

d. Terms Added:
CONDITIONS NOT MONITORED
DATA LINK AUTOMATIC TERMINAL INFORMATION SERVICE (D–ATIS) [ICAO]
ENHANCED FLIGHT VISION SYSTEM (EFVS)
ESTIMATED (EST)
IRREGULAR SURFACE
MODEL AIRCRAFT
NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)
NOT STANDARD (NOT STD)
OUT OF SERVICE

e. Terms Deleted:
MINIMUM NAVIGATION PERFORMANCE SPECIFICATION (MNPS)
MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE (MNPSA)

f. Terms Modified:
CLEARED FOR THE OPTION
OPTION APPROACH

g. Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

ARRIVAL AIRCRAFT INTERVAL– An internally generated program in hundredths of minutes based upon the AAR. AAI is the desired optimum interval between successive arrival aircraft over the vertex.

ARRIVAL CENTER– The ARTCC having jurisdiction for the impacted airport.

ARRIVAL DELAY– A parameter which specifies a period of time in which no aircraft will be metered for arrival at the specified airport.

ARRIVAL SECTOR– An operational control sector containing one or more meter fixes.

ARRIVAL SECTOR ADVISORY LIST– An ordered list of data on arrivals displayed at the PVD/MDM of the sector which controls the meter fix.

ARRIVAL SEQUENCING PROGRAM– The automated program designed to assist in sequencing aircraft destined for the same airport.

ARRIVAL TIME– The time an aircraft touches down on arrival.

ARSR–
(See AIR ROUTE SURVEILLANCE RADAR.)

ARTCC–
(See AIR ROUTE TRAFFIC CONTROL CENTER.)

ARTS–
(See AUTOMATED RADAR TERMINAL SYSTEMS.)

ASDA–
(See ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDA [ICAO]–
(See ICAO Term ACCELERATE-STOP DISTANCE AVAILABLE.)

ASDE–
(See AIRPORT SURFACE DETECTION EQUIPMENT.)

ASF–
(See AIRPORT STREAM FILTER.)

ASLAR–
(See AIRCRAFT SURGE LAUNCH AND RECOVERY.)

ASP–
(See ARRIVAL SEQUENCING PROGRAM.)

ASR–
(See AIRPORT SURVEILLANCE RADAR.)

ASR APPROACH–
(See SURVEILLANCE APPROACH.)

ASSOCIATED– A radar target displaying a data block with flight identification and altitude information.
(See UNASSOCIATED.)

ATC–
(See AIR TRAFFIC CONTROL.)

ATC ADVISES– Used to prefix a message of noncontrol information when it is relayed to an aircraft by other than an air traffic controller.
(See ADVISORY.)

ATC ASSIGNED AIRSPACE– Airspace of defined vertical/lateral limits, assigned by ATC, for the purpose of providing air traffic segregation between the specified activities being conducted within the assigned airspace and other IFR air traffic.
(See SPECIAL USE AIRSPACE.)

ATC CLEARANCE–
(See AIR TRAFFIC CLEARANCE.)

ATC CLEARS– Used to prefix an ATC clearance when it is relayed to an aircraft by other than an air traffic controller.

ATC INSTRUCTIONS– Directives issued by air traffic control for the purpose of requiring a pilot to take specific actions; e.g., “Turn left heading two five zero,” “Go around,” “Clear the runway.”
(Refer to 14 CFR Part 91.)

ATC PREFERRED ROUTE NOTIFICATION– EDST notification to the appropriate controller of the need to determine if an ATC preferred route needs to be applied, based on destination airport.
(See ROUTE ACTION NOTIFICATION.)
(See EN ROUTE DECISION SUPPORT TOOL.)

ATC PREFERRED ROUTES– Preferred routes that are not automatically applied by Host.

ATC REQUESTS– Used to prefix an ATC request when it is relayed to an aircraft by other than an air traffic controller.

ATC SECURITY SERVICES – Communications and security tracking provided by an ATC facility in support of the DHS, the DOD, or other Federal security elements in the interest of national security.

Such security services are only applicable within designated areas. ATC security services do not include ATC basic radar services or flight following.

ATC SECURITY SERVICES POSITION – The position responsible for providing ATC security services as defined. This position does not provide ATC, IFR separation, or VFR flight following services, but is responsible for providing security services in an area comprising airspace assigned to one or more ATC operating sectors. This position may be combined with control positions.

ATC SECURITY TRACKING– The continuous tracking of aircraft movement by an ATC facility in support of the DHS, the DOD, or other security elements for national security using radar (i.e., radar tracking) or other means (e.g., manual tracking) without providing basic radar services (including traffic advisories) or other ATC services not defined in this section.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:
a. Radar (See RADAR)
b. ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE¿BROADCAST.)
c. WAM (See WIDE AREA MULTILATERATION)
(See INTERROGATOR.)
(See TRANSPONDER.)
(See ICAO term RADAR.)
(Refer to AIM.)

ATCAA–
(See ATC ASSIGNED AIRSPACE.)

ATCRBS–
(See RADAR.)

ATCSCC–
(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT–
(See TOWER.)

ATD–
(See ALONG–TRACK DISTANCE.)

ATIS–
(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]–
(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATS ROUTE [ICAO]– A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.
Note: The term "ATS Route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)- The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH–An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED INFORMATION TRANSFER– A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM– A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.
(See FAAO JO 7110.65, Para 10–6–4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)– An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)– The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.
(See EN ROUTE DECISION SUPPORT TOOL.)

associated with wind shear. CAT is often encountered in the vicinity of the jet stream.

(See WIND SHEAR.)

(See JET STREAM.)

CLEAR OF THE RUNWAY–

a. Taxiing aircraft, which is approaching a runway, is clear of the runway when all parts of the aircraft are held short of the applicable runway holding position marking.

b. A pilot or controller may consider an aircraft, which is exiting or crossing a runway, to be clear of the runway when all parts of the aircraft are beyond the runway edge and there are no restrictions to its continued movement beyond the applicable runway holding position marking.

c. Pilots and controllers shall exercise good judgement to ensure that adequate separation exists between all aircraft on runways and taxiways at airports with inadequate runway edge lines or holding position markings.

CLEARANCE–

(See AIR TRAFFIC CLEARANCE.)

CLEARANCE LIMIT– The fix, point, or location to which an aircraft is cleared when issued an air traffic clearance.

(See ICAO term CLEARANCE LIMIT.)

CLEARANCE LIMIT [ICAO]– The point to which an aircraft is granted an air traffic control clearance.

CLEARANCE VOID IF NOT OFF BY (TIME)– Used by ATC to advise an aircraft that the departure clearance is automatically canceled if takeoff is not made prior to a specified time. The pilot must obtain a new clearance or cancel his/her IFR flight plan if not off by the specified time.

(See ICAO term CLEARANCE VOID TIME.)

CLEARANCE VOID TIME [ICAO]– A time specified by an air traffic control unit at which a clearance ceases to be valid unless the aircraft concerned has already taken action to comply therewith.

CLEARED APPROACH– ATC authorization for an aircraft to execute any standard or special instrument approach procedure for that airport. Normally, an aircraft will be cleared for a specific instrument approach procedure.

(See CLEARED (Type of) APPROACH.)

(See INSTRUMENT APPROACH PROCEDURE.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

CLEARED (Type of) APPROACH– ATC authorization for an aircraft to execute a specific instrument approach procedure to an airport; e.g., "Cleared ILS Runway Three Six Approach."

(See APPROACH CLEARANCE.)

(See INSTRUMENT APPROACH PROCEDURE.)

(Refer to 14 CFR Part 91.)

(Refer to AIM.)

CLEARED AS FILED– Means the aircraft is cleared to proceed in accordance with the route of flight filed in the flight plan. This clearance does not include the altitude, DP, or DP Transition.

(See REQUEST FULL ROUTE CLEARANCE.)

(Refer to AIM.)

CLEARED FOR TAKEOFF– ATC authorization for an aircraft to depart. It is predicated on known traffic and known physical airport conditions.

CLEARED FOR THE OPTION– ATC authorization for an aircraft to make a touch-and-go, low approach, missed approach, stop and go, or full stop landing at the discretion of the pilot. It is normally used in training so that an instructor can evaluate a student's performance under changing situations. Pilots should advise ATC if they decide to remain on the runway, of any delay in their stop and go, delay clearing the runway, or are unable to comply with the instruction(s).

(See OPTION APPROACH.)

(Refer to AIM.)

CLEARED THROUGH– ATC authorization for an aircraft to make intermediate stops at specified airports without refiling a flight plan while en route to the clearance limit.

CLEARED TO LAND– ATC authorization for an aircraft to land. It is predicated on known traffic and known physical airport conditions.

CLEARWAY– An area beyond the takeoff runway under the control of airport authorities within which terrain or fixed obstacles may not extend above

specified limits. These areas may be required for certain turbine-powered operations and the size and upward slope of the clearway will differ depending on when the aircraft was certificated.

(Refer to 14 CFR Part 1.)

CLIMB TO VFR– ATC authorization for an aircraft to climb to VFR conditions within Class B, C, D, and E surface areas when the only weather limitation is restricted visibility. The aircraft must remain clear of clouds while climbing to VFR.

(See SPECIAL VFR CONDITIONS.)

(Refer to AIM.)

CLIMBOUT– That portion of flight operation between takeoff and the initial cruising altitude.

CLIMB VIA– An abbreviated ATC clearance that requires compliance with the procedure lateral path, associated speed restrictions, and altitude restrictions along the cleared route or procedure.

CLOSE PARALLEL RUNWAYS– Two parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3000 feet (750 feet for SOIA operations) that are authorized to conduct simultaneous independent approach operations. PRM and simultaneous close parallel appear in approach title. Dual communications, special pilot training, an Attention All Users Page (AAUP), NTZ monitoring by displays that have aural and visual alerting algorithms are required. A high update rate surveillance sensor is required for certain runway or approach course spacing.

CLOSED RUNWAY– A runway that is unusable for aircraft operations. Only the airport management/ military operations office can close a runway.

CLOSED TRAFFIC– Successive operations involving takeoffs and landings or low approaches where the aircraft does not exit the traffic pattern.

CLOUD– A cloud is a visible accumulation of minute water droplets and/or ice particles in the atmosphere above the Earth's surface. Cloud differs from ground fog, fog, or ice fog only in that the latter are, by definition, in contact with the Earth's surface.

CLT–

(See CALCULATED LANDING TIME.)

CLUTTER– In radar operations, clutter refers to the reception and visual display of radar returns caused by precipitation, chaff, terrain, numerous aircraft targets, or other phenomena. Such returns may limit or preclude ATC from providing services based on radar.

(See CHAFF.)

(See GROUND CLUTTER.)

(See PRECIPITATION.)

(See TARGET.)

(See ICAO term RADAR CLUTTER.)

CMNPS–

(See CANADIAN MINIMUM NAVIGATION PERFORMANCE SPECIFICATION AIRSPACE.)

COASTAL FIX– A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

CODES– The number assigned to a particular multiple pulse reply signal transmitted by a transponder.

(See DISCRETE CODE.)

COLD TEMPERATURE COMPENSATION– An action on the part of the pilot to adjust an aircraft's indicated altitude due to the effect of cold temperatures on true altitude above terrain versus aircraft indicated altitude. The amount of compensation required increases at a greater rate with a decrease in temperature and increase in height above the reporting station.

COLLABORATIVE TRAJECTORY OPTIONS PROGRAM (CTOP)- CTOP is a traffic management program administered by the Air Traffic Control System Command Center (ATCSCC) that manages demand through constrained airspace, while considering operator preference with regard to both route and delay as defined in a Trajectory Options Set (TOS).

COMBINED CENTER-RAPCON– An air traffic facility which combines the functions of an ARTCC and a radar approach control facility.

(See AIR ROUTE TRAFFIC CONTROL CENTER.)

(See RADAR APPROACH CONTROL FACILITY.)

COMMON POINT– A significant point over which two or more aircraft will report passing or have reported passing before proceeding on the same or diverging tracks. To establish/maintain longitudinal separation, a controller may determine a common

point not originally in the aircraft's flight plan and then clear the aircraft to fly over the point.

(See SIGNIFICANT POINT.)

COMMON PORTION–

(See COMMON ROUTE.)

COMMON ROUTE– That segment of a North American Route between the inland navigation facility and the coastal fix.

OR

COMMON ROUTE– Typically the portion of a RNAV STAR between the en route transition end point and the runway transition start point; however, the common route may only consist of a single point that joins the en route and runway transitions.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF)– A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, Multicom, FSS, or tower frequency and is identified in appropriate aeronautical publications.

(See DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA.)

(Refer to AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers.)

COMPASS LOCATOR– A low power, low or medium frequency (L/MF) radio beacon installed at the site of the outer or middle marker of an instrument landing system (ILS). It can be used for navigation at distances of approximately 15 miles or as authorized in the approach procedure.

a. Outer Compass Locator (LOM)– A compass locator installed at the site of the outer marker of an instrument landing system.

(See OUTER MARKER.)

b. Middle Compass Locator (LMM)– A compass locator installed at the site of the middle marker of an instrument landing system.

(See MIDDLE MARKER.)

(See ICAO term LOCATOR.)

COMPASS ROSE– A circle, graduated in degrees, printed on some charts or marked on the ground at an airport. It is used as a reference to either true or magnetic direction.

COMPLY WITH RESTRICTIONS– An ATC instruction that requires an aircraft being vectored back onto an arrival or departure procedure to comply with all altitude and/or speed restrictions depicted on the procedure. This term may be used in lieu of repeating each remaining restriction that appears on the procedure.

COMPOSITE FLIGHT PLAN– A flight plan which specifies VFR operation for one portion of flight and IFR for another portion. It is used primarily in military operations.

(Refer to AIM.)

COMPOSITE ROUTE SYSTEM– An organized oceanic route structure, incorporating reduced lateral spacing between routes, in which composite separation is authorized.

COMPOSITE SEPARATION– A method of separating aircraft in a composite route system where, by management of route and altitude assignments, a combination of half the lateral minimum specified for the area concerned and half the vertical minimum is applied.

COMPULSORY REPORTING POINTS– Reporting points which must be reported to ATC. They are designated on aeronautical charts by solid triangles or filed in a flight plan as fixes selected to define direct routes. These points are geographical locations which are defined by navigation aids/fixes. Pilots should discontinue position reporting over compulsory reporting points when informed by ATC that their aircraft is in "radar contact."

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 shall be issued when this procedure is applied.

Note: This procedure shall not be provided utilizing mosaic radar systems.

CONFORMANCE– The condition established when an aircraft's actual position is within the conformance region constructed around that aircraft at its position, according to the trajectory associated with the aircraft's Current Plan.

CONFORMANCE REGION– A volume, bounded laterally, vertically, and longitudinally, within which an aircraft must be at a given time in order to be in conformance with the Current Plan Trajectory for that aircraft. At a given time, the conformance region is determined by the simultaneous application of the lateral, vertical, and longitudinal conformance bounds for the aircraft at the position defined by time and aircraft's trajectory.

CONSOLAN– A low frequency, long-distance NAVAID used principally for transoceanic navigations.

CONTACT–

a. Establish communication with (followed by the name of the facility and, if appropriate, the frequency to be used).

b. A flight condition wherein the pilot ascertains the attitude of his/her aircraft and navigates by visual reference to the surface.

(See CONTACT APPROACH.)

(See RADAR CONTACT.)

CONTACT APPROACH– An approach wherein an aircraft on an IFR flight plan, having an air traffic control authorization, operating clear of clouds with at least 1 mile flight visibility and a reasonable expectation of continuing to the destination airport in those conditions, may deviate from the instrument approach procedure and proceed to the destination airport by visual reference to the surface. This approach will only be authorized when requested by the pilot and the reported ground visibility at the destination airport is at least 1 statute mile.

(Refer to AIM.)

CONTAMINATED RUNWAY– A runway is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber, or other substances are present. A runway is contaminated with respect to rubber deposits or other friction-degrading substances when the average friction value for any 500-foot segment of the runway within the ALD fails below the recommended minimum friction level and the average friction value in the adjacent 500-foot segments falls below the maintenance planning friction level.

CONTERMINOUS U.S.– The 48 adjoining States and the District of Columbia.

CONTINENTAL UNITED STATES– The 49 States located on the continent of North America and the District of Columbia.

CONTINUE– When used as a control instruction should be followed by another word or words clarifying what is expected of the pilot. Example: "continue taxi," "continue descent," "continue inbound," etc.

CONTROL AREA [ICAO]– A controlled airspace extending upwards from a specified limit above the earth.

CONTROL SECTOR– An airspace area of defined horizontal and vertical dimensions for which a controller or group of controllers has air traffic control responsibility, normally within an air route traffic control center or an approach control facility. Sectors are established based on predominant traffic flows, altitude strata, and controller workload. Pilot-communications during operations within a sector are normally maintained on discrete frequencies assigned to the sector.

(See DISCRETE FREQUENCY.)

CONTROL SLASH– A radar beacon slash representing the actual position of the associated aircraft. Normally, the control slash is the one closest to the interrogating radar beacon site. When ARTCC radar is operating in narrowband (digitized) mode, the control slash is converted to a target symbol.

CONTROLLED AIRSPACE– An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

a. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.

b. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in 14 CFR Part 91 (for specific

operating requirements, please refer to 14 CFR Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, please refer to 14 CFR Part 71).

c. Controlled airspace in the United States is designated as follows:

1. CLASS A– Generally, that airspace from 18,000 feet MSL up to and including FL 600, including the airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska. Unless otherwise authorized, all persons must operate their aircraft under IFR.

2. CLASS B– Generally, that airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers (some Class B airspaces areas resemble upside-down wedding cakes), and is designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all aircraft that are so cleared receive separation services within the airspace. The cloud clearance requirement for VFR operations is "clear of clouds."

3. CLASS C– Generally, that airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower, are serviced by a radar approach control, and that have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a 5 nautical mile (NM) radius, a circle with a 10NM radius that extends no lower than 1,200 feet up to 4,000 feet above the airport elevation and an outer area that is not charted. Each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while within the airspace. VFR aircraft are only separated from IFR aircraft within the airspace.

(See OUTER AREA.)

4. CLASS D– Generally, that airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have an operational control tower. The configuration of each Class D airspace area is individually tailored and when instrument procedures are published, the airspace will normally be designed to contain the procedures. Arrival extensions for instrument approach procedures may be Class D or Class E airspace. Unless otherwise authorized, each person must establish two-way radio communications with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. No separation services are provided to VFR aircraft.

5. CLASS E– Generally, if the airspace is not Class A, Class B, Class C, or Class D, and it is controlled airspace, it is Class E airspace. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. When designated as a surface area, the airspace will be configured to contain all instrument procedures. Also in this class are Federal airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to/from the terminal or en route environment, en route domestic, and offshore airspace areas designated below 18,000 feet MSL. Unless designated at a lower altitude, Class E airspace begins at 14,500 MSL over the United States, including that airspace overlying the waters within 12 nautical miles of the coast of the 48 contiguous States and Alaska, up to, but not including 18,000 feet MSL, and the airspace above FL 600.

CONTROLLED AIRSPACE [ICAO]– An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Note: Controlled airspace is a generic term which covers ATS airspace Classes A, B, C, D, and E.

CONTROLLED TIME OF ARRIVAL– Arrival time assigned during a Traffic Management Program. This time may be modified due to adjustments or user options.

CONTROLLER–

(See AIR TRAFFIC CONTROL SPECIALIST.)

CONTROLLER [ICAO]– A person authorized to provide air traffic control services.

CONTROLLER PILOT DATA LINK COMMUNICATIONS (CPDLC)– A two–way digital communications system that conveys textual air traffic control messages between controllers and pilots using ground or satellite-based radio relay stations.

CONVECTIVE SIGMET– A weather advisory concerning convective weather significant to the safety of all aircraft. Convective SIGMETs are issued for tornadoes, lines of thunderstorms, embedded thunderstorms of any intensity level, areas of thunderstorms greater than or equal to VIP level 4 with an area coverage of $^{4}/_{10}$ (40%) or more, and hail $^{3}/_{4}$ inch or greater.

(See AIRMET.)
(See AWW.)
(See CWA.)
(See SIGMET.)
(Refer to AIM.)

CONVECTIVE SIGNIFICANT METEOROLOGICAL INFORMATION–

(See CONVECTIVE SIGMET.)

COORDINATES– The intersection of lines of reference, usually expressed in degrees/minutes/seconds of latitude and longitude, used to determine position or location.

COORDINATION FIX– The fix in relation to which facilities will handoff, transfer control of an aircraft, or coordinate flight progress data. For terminal facilities, it may also serve as a clearance for arriving aircraft.

COPTER–

(See HELICOPTER.)

CORRECTION– An error has been made in the transmission and the correct version follows.

COUPLED APPROACH– An instrument approach performed by the aircraft autopilot, and/or visually depicted on the flight director, which is receiving position information and/or steering commands from onboard navigational equipment. In general, coupled non-precision approaches must be flown manually (autopilot disengaged) at altitudes lower than 50 feet AGL below the minimum descent altitude, and coupled precision approaches must be flown manually (autopilot disengaged) below 50 feet AGL unless authorized to conduct autoland operations. Coupled instrument approaches are commonly flown to the allowable IFR weather minima established by the operator or PIC, or flown VFR for training and safety.

COURSE–

a. The intended direction of flight in the horizontal plane measured in degrees from north.

b. The ILS localizer signal pattern usually specified as the front course or the back course.

(See BEARING.)
(See INSTRUMENT LANDING SYSTEM.)
(See RADIAL.)

CPDLC–

(See CONTROLLER PILOT DATA LINK COMMUNICATIONS.)

CPL [ICAO]–

(See ICAO term CURRENT FLIGHT PLAN.)

CRITICAL ENGINE– The engine which, upon failure, would most adversely affect the performance or handling qualities of an aircraft.

CROSS (FIX) AT (ALTITUDE)– Used by ATC when a specific altitude restriction at a specified fix is required.

CROSS (FIX) AT OR ABOVE (ALTITUDE)– Used by ATC when an altitude restriction at a specified fix is required. It does not prohibit the aircraft from crossing the fix at a higher altitude than specified; however, the higher altitude may not be one that will violate a succeeding altitude restriction or altitude assignment.

(See ALTITUDE RESTRICTION.)
(Refer to AIM.)

CROSS (FIX) AT OR BELOW (ALTITUDE)– Used by ATC when a maximum crossing altitude at a specific fix is required. It does not prohibit the aircraft from crossing the fix at a lower altitude; however, it must be at or above the minimum IFR altitude.

(See ALTITUDE RESTRICTION.)
(See MINIMUM IFR ALTITUDES.)
(Refer to 14 CFR Part 91.)

CROSSWIND–

a. When used concerning the traffic pattern, the word means “crosswind leg.”

(See TRAFFIC PATTERN.)

b. When used concerning wind conditions, the word means a wind not parallel to the runway or the path of an aircraft.

(See CROSSWIND COMPONENT.)

CROSSWIND COMPONENT– The wind component measured in knots at 90 degrees to the longitudinal axis of the runway.

CRUISE– Used in an ATC clearance to authorize a pilot to conduct flight at any altitude from the minimum IFR altitude up to and including the altitude specified in the clearance. The pilot may level off at any intermediate altitude within this block of airspace. Climb/descent within the block is to be made at the discretion of the pilot. However, once the pilot starts descent and verbally reports leaving an altitude in the block, he/she may not return to that altitude without additional ATC clearance. Further, it is approval for the pilot to proceed to and make an approach at destination airport and can be used in conjunction with:

a. An airport clearance limit at locations with a standard/special instrument approach procedure. The CFRs require that if an instrument letdown to an airport is necessary, the pilot shall make the letdown in accordance with a standard/special instrument approach procedure for that airport, or

b. An airport clearance limit at locations that are within/below/outside controlled airspace and without a standard/special instrument approach procedure. Such a clearance is NOT AUTHORIZATION for the pilot to descend under IFR conditions below the applicable minimum IFR altitude nor does it imply that ATC is exercising control over aircraft in Class G airspace; however, it provides a means for the aircraft to proceed to destination airport, descend, and land in accordance with applicable CFRs governing VFR flight operations. Also, this provides search and rescue protection until such time as the IFR flight plan is closed.

(See INSTRUMENT APPROACH PROCEDURE.)

CRUISE CLIMB– A climb technique employed by aircraft, usually at a constant power setting, resulting in an increase of altitude as the aircraft weight decreases.

CRUISING ALTITUDE– An altitude or flight level maintained during en route level flight. This is a constant altitude and should not be confused with a cruise clearance.

(See ALTITUDE.)

(See ICAO term CRUISING LEVEL.)

CRUISING LEVEL–

(See CRUISING ALTITUDE.)

CRUISING LEVEL [ICAO]– A level maintained during a significant portion of a flight.

CT MESSAGE– An EDCT time generated by the ATCSCC to regulate traffic at arrival airports. Normally, a CT message is automatically transferred from the traffic management system computer to the NAS en route computer and appears as an EDCT. In the event of a communication failure between the traffic management system computer and the NAS, the CT message can be manually entered by the TMC at the en route facility.

CTA–

(See CONTROLLED TIME OF ARRIVAL.)

(See ICAO term CONTROL AREA.)

CTAF–

(See COMMON TRAFFIC ADVISORY FREQUENCY.)

CTAS–

(See CENTER TRACON AUTOMATION SYSTEM.)

CTOP–

(See COLLABORATIVE TRAJECTORY OPTIONS PROGRAM)

CTRD–

(See CERTIFIED TOWER RADAR DISPLAY.)

CURRENT FLIGHT PLAN [ICAO]– The flight plan, including changes, if any, brought about by subsequent clearances.

CURRENT PLAN– The ATC clearance the aircraft has received and is expected to fly.

CVFP APPROACH–

(See CHARTED VISUAL FLIGHT PROCEDURE APPROACH.)

CWA–

(See CENTER WEATHER ADVISORY and WEATHER ADVISORY.)

D

D-ATIS–

(See DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE.)

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.

DEAD RECKONING– Dead reckoning, as applied to flying, is the navigation of an airplane solely by means of computations based on airspeed, course, heading, wind direction, and speed, groundspeed, and elapsed time.

DECISION ALTITUDE/DECISION HEIGHT [ICAO Annex 6]- A specified altitude or height (A/H) in the precision approach at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

1. Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.

2. Category II and III minima are expressed as a DH and not a DA. Minima is assessed by reference to a radio altimeter and not a barometric altimeter, which makes the minima a DH.

3. The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

Decision altitude (DA) - A specified altitude (mean sea level (MSL)) on an instrument approach procedure (ILS, GLS, vertically guided RNAV) at which the pilot must decide whether to continue the approach or initiate an immediate missed approach if the pilot does not see the required visual references.

DECISION HEIGHT– With respect to the operation of aircraft, means the height at which a decision must be made during an ILS or PAR instrument approach to either continue the approach or to execute a missed approach.

(See ICAO term DECISION ALTITUDE/DECISION HEIGHT.)

DECODER– The device used to decipher signals received from ATCRBS transponders to effect their display as select codes.

(See CODES.)

(See RADAR.)

DEFENSE AREA- Any airspace of the contiguous United States that is not an ADIZ in which the control of aircraft is required for reasons of national security.

DEFENSE VISUAL FLIGHT RULES– Rules applicable to flights within an ADIZ conducted under the visual flight rules in 14 CFR Part 91.

(See AIR DEFENSE IDENTIFICATION ZONE.)

(Refer to 14 CFR Part 91.)

(Refer to 14 CFR Part 99.)

DELAY ASSIGNMENT (DAS)– Delays are distributed to aircraft based on the traffic management program parameters. The delay assignment is calculated in 15–minute increments and appears as a table in Traffic Flow Management System (TFMS).

DELAY INDEFINITE (REASON IF KNOWN) EXPECT FURTHER CLEARANCE (TIME)– Used by ATC to inform a pilot when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; e.g., a disabled aircraft

on the runway, terminal or center area saturation, weather below landing minimums, etc.

(See EXPECT FURTHER CLEARANCE (TIME).)

DELAY TIME– The amount of time that the arrival must lose to cross the meter fix at the assigned meter fix time. This is the difference between ACLT and VTA.

DEPARTURE CENTER– The ARTCC having jurisdiction for the airspace that generates a flight to the impacted airport.

DEPARTURE CONTROL– A function of an approach control facility providing air traffic control service for departing IFR and, under certain conditions, VFR aircraft.

(See APPROACH CONTROL FACILITY.)
(Refer to AIM.)

DEPARTURE SEQUENCING PROGRAM– A program designed to assist in achieving a specified interval over a common point for departures.

DEPARTURE TIME– The time an aircraft becomes airborne.

DESCEND VIA– An abbreviated ATC clearance that requires compliance with a published procedure lateral path and associated speed restrictions and provides a pilot-discretion descent to comply with published altitude restrictions.

DESCENT SPEED ADJUSTMENTS– Speed deceleration calculations made to determine an accurate VTA. These calculations start at the transition point and use arrival speed segments to the vertex.

DESIGNATED COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) AREA- In Alaska, in addition to being designated for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating airport traffic control tower, a CTAF may also be designated for the purpose of carrying out advisory practices for operations in and through areas with a high volume of VFR traffic.

DESIRED COURSE–

a. True– A predetermined desired course direction to be followed (measured in degrees from true north).

b. Magnetic– A predetermined desired course direction to be followed (measured in degrees from local magnetic north).

DESIRED TRACK– The planned or intended track between two waypoints. It is measured in degrees from either magnetic or true north. The instantaneous angle may change from point to point along the great circle track between waypoints.

DETRESFA (DISTRESS PHASE) [ICAO]– The code word used to designate an emergency phase wherein there is reasonable certainty that an aircraft and its occupants are threatened by grave and imminent danger or require immediate assistance.

DEVIATIONS–

a. A departure from a current clearance, such as an off course maneuver to avoid weather or turbulence.

b. Where specifically authorized in the CFRs and requested by the pilot, ATC may permit pilots to deviate from certain regulations.

DH–

(See DECISION HEIGHT.)

DH [ICAO]–

(See ICAO Term DECISION ALTITUDE/ DECISION HEIGHT.)

DIGITAL-AUTOMATIC TERMINAL INFORMATION SERVICE (D-ATIS)– The service provides text messages to aircraft, airlines, and other users outside the standard reception range of conventional ATIS via landline and data link communications to the cockpit. Also, the service provides a computer–synthesized voice message that can be transmitted to all aircraft within range of existing transmitters. The Terminal Data Link System (TDLS) D-ATIS application uses weather inputs from local automated weather sources or manually entered meteorological data together with preprogrammed menus to provide standard information to users. Airports with D-ATIS capability are listed in the Chart Supplement U.S.

DIGITAL TARGET– A computer–generated symbol representing an aircraft's position, based on a primary return or radar beacon reply, shown on a digital display.

DIGITAL TERMINAL AUTOMATION SYSTEM (DTAS)– A system where digital radar and beacon data is presented on digital displays and the operational program monitors the system performance on a real–time basis.

DIGITIZED TARGET– A computer–generated indication shown on an analog radar display resulting from a primary radar return or a radar beacon reply.

DIRECT– Straight line flight between two navigational aids, fixes, points, or any combination thereof. When used by pilots in describing off-airway routes, points defining direct route segments become compulsory reporting points unless the aircraft is under radar contact.

DIRECTLY BEHIND– An aircraft is considered to be operating directly behind when it is following the actual flight path of the lead aircraft over the surface of the earth except when applying wake turbulence separation criteria.

DISCRETE BEACON CODE–
(See DISCRETE CODE.)

DISCRETE CODE– As used in the Air Traffic Control Radar Beacon System (ATCRBS), any one of the 4096 selectable Mode 3/A aircraft transponder codes except those ending in zero zero; e.g., discrete codes: 0010, 1201, 2317, 7777; nondiscrete codes: 0100, 1200, 7700. Nondiscrete codes are normally reserved for radar facilities that are not equipped with discrete decoding capability and for other purposes such as emergencies (7700), VFR aircraft (1200), etc.
(See RADAR.)
(Refer to AIM.)

DISCRETE FREQUENCY– A separate radio frequency for use in direct pilot-controller communications in air traffic control which reduces frequency congestion by controlling the number of aircraft operating on a particular frequency at one time. Discrete frequencies are normally designated for each control sector in en route/terminal ATC facilities. Discrete frequencies are listed in the Chart Supplement U.S. and the DOD FLIP IFR En Route Supplement.
(See CONTROL SECTOR.)

DISPLACED THRESHOLD– A threshold that is located at a point on the runway other than the designated beginning of the runway.
(See THRESHOLD.)
(Refer to AIM.)

DISTANCE MEASURING EQUIPMENT (DME)– Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.
(See TACAN.)
(See VORTAC.)

DISTRESS– A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

DIVE BRAKES–
(See SPEED BRAKES.)

DIVERSE VECTOR AREA– In a radar environment, that area in which a prescribed departure route is not required as the only suitable route to avoid obstacles. The area in which random radar vectors below the MVA/MIA, established in accordance with the TERPS criteria for diverse departures, obstacles and terrain avoidance, may be issued to departing aircraft.

DIVERSION (DVRSN)– Flights that are required to land at other than their original destination for reasons beyond the control of the pilot/company, e.g. periods of significant weather.

DME–
(See DISTANCE MEASURING EQUIPMENT.)

DME FIX– A geographical position determined by reference to a navigational aid which provides distance and azimuth information. It is defined by a specific distance in nautical miles and a radial, azimuth, or course (i.e., localizer) in degrees magnetic from that aid.
(See DISTANCE MEASURING EQUIPMENT.)
(See FIX.)

DME SEPARATION– Spacing of aircraft in terms of distances (nautical miles) determined by reference to distance measuring equipment (DME).
(See DISTANCE MEASURING EQUIPMENT.)

DOD FLIP– Department of Defense Flight Information Publications used for flight planning, en route, and terminal operations. FLIP is produced by the National Geospatial–Intelligence Agency (NGA) for world-wide use. United States Government Flight Information Publications (en route charts and instrument approach procedure charts) are incorporated in DOD FLIP for use in the National Airspace System (NAS).

DOMESTIC AIRSPACE– Airspace which overlies the continental land mass of the United States plus Hawaii and U.S. possessions. Domestic airspace extends to 12 miles offshore.

DOWNBURST– A strong downdraft which induces an outburst of damaging winds on or near the ground. Damaging winds, either straight or curved, are highly

divergent. The sizes of downbursts vary from 1/2 mile or less to more than 10 miles. An intense downburst often causes widespread damage. Damaging winds, lasting 5 to 30 minutes, could reach speeds as high as 120 knots.

DOWNWIND LEG–
(See TRAFFIC PATTERN.)

DP–
(See INSTRUMENT DEPARTURE PROCEDURE.)

DRAG CHUTE– A parachute device installed on certain aircraft which is deployed on landing roll to assist in deceleration of the aircraft.

DROP ZONE– Any pre-determined area upon which parachutists or objects land after making an intentional parachute jump or drop.
(Refer to 14 CFR §105.3, Definitions)

DSP–
(See DEPARTURE SEQUENCING PROGRAM.)

DT–
(See DELAY TIME.)

DTAS–
(See DIGITAL TERMINAL AUTOMATION SYSTEM.)

DUE REGARD– A phase of flight wherein an aircraft commander of a State-operated aircraft assumes responsibility to separate his/her aircraft from all other aircraft.
(See also FAAO JO 7110.65, Para 1–2–1, WORD MEANINGS.)

DUTY RUNWAY–
(See RUNWAY IN USE/ACTIVE RUNWAY/DUTY RUNWAY.)

DVA–
(See DIVERSE VECTOR AREA.)

DVFR–
(See DEFENSE VISUAL FLIGHT RULES.)

DVFR FLIGHT PLAN– A flight plan filed for a VFR aircraft which intends to operate in airspace within which the ready identification, location, and control of aircraft are required in the interest of national security.

DVRSN–
(See DIVERSION.)

DYNAMIC– Continuous review, evaluation, and change to meet demands.

DYNAMIC RESTRICTIONS– Those restrictions imposed by the local facility on an “as needed” basis to manage unpredictable fluctuations in traffic demands.

E

EAS–
(See EN ROUTE AUTOMATION SYSTEM.)

EDCT–
(See EXPECT DEPARTURE CLEARANCE TIME.)

EDST–
(See EN ROUTE DECISION SUPPORT TOOL)

EFC–
(See EXPECT FURTHER CLEARANCE (TIME).)

ELT–
(See EMERGENCY LOCATOR TRANSMITTER.)

EMERGENCY– A distress or an urgency condition.

EMERGENCY LOCATOR TRANSMITTER– A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243.0 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone, 2-4 times per second. It is designed to function without human action after an accident.
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

E-MSAW–
(See EN ROUTE MINIMUM SAFE ALTITUDE WARNING.)

ENHANCED FLIGHT VISION SYSTEM (EFVS) – An EFVS is an installed airborne system which uses an electronic means to provide a display of the forward external scene topography (the applicable natural or manmade features of a place or region especially in a way to show their relative positions and elevation) through the use of imaging sensors, such as forward looking infrared, millimeter wave radiometry, millimeter wave radar, and/or low light level image intensifying. When flying an instrument approach procedure (IAP), if the runway environment cannot be visually acquired at decision altitude (DA) or minimum descent altitude (MDA) using natural vision, then a pilot may use an EFVS to continue descending down to 100 feet above the Touchdown Zone Elevation (TDZE), provided all of the visibility requirements of 14 CFR part 91.175 (l) are met.

EN ROUTE AIR TRAFFIC CONTROL SERVICES– Air traffic control service provided aircraft on IFR flight plans, generally by centers, when these aircraft are operating between departure and destination terminal areas. When equipment, capabilities, and controller workload permit, certain advisory/assistance services may be provided to VFR aircraft.
(See AIR ROUTE TRAFFIC CONTROL CENTER.)
(Refer to AIM.)

EN ROUTE AUTOMATION SYSTEM (EAS)– The complex integrated environment consisting of situation display systems, surveillance systems and flight data processing, remote devices, decision support tools, and the related communications equipment that form the heart of the automated IFR air traffic control system. It interfaces with automated terminal systems and is used in the control of en route IFR aircraft.
(Refer to AIM.)

EN ROUTE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE DECISION SUPPORT TOOL– An automated tool provided at each Radar Associate position in selected En Route facilities. This tool utilizes flight and radar data to determine present and future trajectories for all active and proposal aircraft and provides enhanced automated flight data management.

EN ROUTE DESCENT– Descent from the en route cruising altitude which takes place along the route of flight.

EN ROUTE HIGH ALTITUDE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE LOW ALTITUDE CHARTS–
(See AERONAUTICAL CHART.)

EN ROUTE MINIMUM SAFE ALTITUDE WARNING– A function of the EAS that aids the controller by providing an alert when a tracked aircraft is below or predicted by the computer to go below a predetermined minimum IFR altitude (MIA).

EN ROUTE SPACING PROGRAM (ESP)– A program designed to assist the exit sector in achieving the required in-trail spacing.

EN ROUTE TRANSITION–

a. Conventional STARs/SIDs. The portion of a SID/STAR that connects to one or more en route airway/jet route.

b. RNAV STARs/SIDs. The portion of a STAR preceding the common route or point, or for a SID the portion following, that is coded for a specific en route fix, airway or jet route.

ESP–

(See EN ROUTE SPACING PROGRAM.)

EST–

(See ESTIMATED.)

ESTABLISHED–To be stable or fixed on a route, route segment, altitude, heading, etc.

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.

d. Precision Approach Runway, Category III–An instrument runway served by ILS to and along the surface of the runway and:

1. Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

2. Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

3. Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRITY– The ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT–
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

INTERMEDIATE FIX– The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF).
(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE LANDING– On the rare occasion that this option is requested, it should be approved. The departure center, however, must advise the ATCSCC so that the appropriate delay is carried over and assigned at the intermediate airport. An intermediate landing airport within the arrival center will not be accepted without coordination with and the approval of the ATCSCC.

INTERNATIONAL AIRPORT– Relating to international flight, it means:

a. An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.

b. A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.

c. Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.
(See ICAO term INTERNATIONAL AIRPORT.)
(Refer to Chart Supplement U.S.)
(Refer to IFIM.)

INTERNATIONAL AIRPORT [ICAO]– Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

INTERNATIONAL CIVIL AVIATION ORGANIZATION [ICAO]– A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

a. Regions include:

1. African-Indian Ocean Region

2. Caribbean Region

3. European Region

4. Middle East/Asia Region

5. North American Region

6. North Atlantic Region

7. Pacific Region

8. South American Region

INTERNATIONAL FLIGHT INFORMATION MANUAL– A publication designed primarily as a pilot's preflight planning guide for flights into foreign airspace and for flights returning to the U.S. from foreign locations.

INTERROGATOR– The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitious-

ly request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system.

(See TRANSPONDER.)

(Refer to AIM.)

INTERSECTING RUNWAYS– Two or more runways which cross or meet within their lengths.

(See INTERSECTION.)

INTERSECTION–

a. A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

b. Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

INTERSECTION DEPARTURE– A departure from any runway intersection except the end of the runway.

(See INTERSECTION.)

INTERSECTION TAKEOFF–

(See INTERSECTION DEPARTURE.)

IR–

(See IFR MILITARY TRAINING ROUTES.)

IRREGULAR SURFACE– A surface that is open for use but not per regulations.

ISR– Indicates the confidence level of the track requires 5NM separation. 3NM separation, 1 1/2NM separation, and target resolution cannot be used.

1300 Hz tone, which is received aurally and visually by compatible airborne equipment.

(See INSTRUMENT LANDING SYSTEM.)

(See MARKER BEACON.)

(Refer to AIM.)

MILES-IN-TRAIL– A specified distance between aircraft, normally, in the same stratum associated with the same destination or route of flight.

MILITARY AUTHORITY ASSUMES RESPONSIBILITY FOR SEPARATION OF AIRCRAFT– A condition whereby the military services involved assume responsibility for separation between participating military aircraft in the ATC system. It is used only for required IFR operations which are specified in letters of agreement or other appropriate FAA or military documents.

MILITARY LANDING ZONE– A landing strip used exclusively by the military for training. A military landing zone does not carry a runway designation.

MILITARY OPERATIONS AREA–

(See SPECIAL USE AIRSPACE.)

MILITARY TRAINING ROUTES– Airspace of defined vertical and lateral dimensions established for the conduct of military flight training at airspeeds in excess of 250 knots IAS.

(See IFR MILITARY TRAINING ROUTES.)

(See VFR MILITARY TRAINING ROUTES.)

MINIMA–

(See MINIMUMS.)

MINIMUM CROSSING ALTITUDE– The lowest altitude at certain fixes at which an aircraft must cross when proceeding in the direction of a higher minimum en route IFR altitude (MEA).

(See MINIMUM EN ROUTE IFR ALTITUDE.)

MINIMUM DESCENT ALTITUDE– The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glideslope is provided.

(See NONPRECISION APPROACH PROCEDURE.)

MINIMUM EN ROUTE IFR ALTITUDE (MEA)– The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal airway or segment thereof, area navigation low or high route, or other direct route applies to the entire width of the airway, segment, or route between the radio fixes defining the airway, segment, or route.

(Refer to 14 CFR Part 91.)

(Refer to 14 CFR Part 95.)

(Refer to AIM.)

MINIMUM FRICTION LEVEL– The friction level specified in AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces, that represents the minimum recommended wet pavement surface friction value for any turbojet aircraft engaged in LAHSO. This value will vary with the particular friction measurement equipment used.

MINIMUM FUEL– Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

(Refer to AIM.)

MINIMUM HOLDING ALTITUDE– The lowest altitude prescribed for a holding pattern which assures navigational signal coverage, communications, and meets obstacle clearance requirements.

MINIMUM IFR ALTITUDES (MIA)– Minimum altitudes for IFR operations as prescribed in 14 CFR Part 91. These altitudes are published on aeronautical charts and prescribed in 14 CFR Part 95 for airways and routes, and in 14 CFR Part 97 for standard instrument approach procedures. If no applicable minimum altitude is prescribed in 14 CFR Part 95 or 14 CFR Part 97, the following minimum IFR altitude applies:

a. In designated mountainous areas, 2,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

b. Other than mountainous areas, 1,000 feet above the highest obstacle within a horizontal distance of 4 nautical miles from the course to be flown; or

c. As otherwise authorized by the Administrator or assigned by ATC.

(See MINIMUM CROSSING ALTITUDE.)
(See MINIMUM EN ROUTE IFR ALTITUDE.)
(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)
(See MINIMUM SAFE ALTITUDE.)
(See MINIMUM VECTORING ALTITUDE.)
(Refer to 14 CFR Part 91.)

MINIMUM OBSTRUCTION CLEARANCE ALTITUDE (MOCA)– The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR.

(Refer to 14 CFR Part 91.)
(Refer to 14 CFR Part 95.)

MINIMUM RECEPTION ALTITUDE– The lowest altitude at which an intersection can be determined.

(Refer to 14 CFR Part 95.)

MINIMUM SAFE ALTITUDE–

a. The minimum altitude specified in 14 CFR Part 91 for various aircraft operations.

b. Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance for emergency use. These altitudes will be identified as Minimum Safe Altitudes or Emergency Safe Altitudes and are established as follows:

1. Minimum Safe Altitude (MSA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance within a 25-mile radius of the navigation facility, waypoint, or airport reference point upon which the MSA is predicated. MSAs are for emergency use only and do not necessarily assure acceptable navigational signal coverage.

(See ICAO term Minimum Sector Altitude.)

2. Emergency Safe Altitude (ESA). Altitudes depicted on approach charts which provide at least 1,000 feet of obstacle clearance in nonmountainous areas and 2,000 feet of obstacle clearance in designated mountainous areas within a 100-mile radius of the navigation facility or waypoint used as the ESA center. These altitudes are normally used only in military procedures and are identified on published procedures as "Emergency Safe Altitudes."

MINIMUM SAFE ALTITUDE WARNING– A function of the ARTS III computer that aids the controller by alerting him/her when a tracked Mode C equipped aircraft is below or is predicted by the computer to go below a predetermined minimum safe altitude.

(Refer to AIM.)

MINIMUM SECTOR ALTITUDE [ICAO]– The lowest altitude which may be used under emergency conditions which will provide a minimum clearance of 300 m (1,000 feet) above all obstacles located in an area contained within a sector of a circle of 46 km (25 NM) radius centered on a radio aid to navigation.

MINIMUMS– Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc.

(See IFR CONDITIONS.)
(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)
(See LANDING MINIMUMS.)
(See VFR CONDITIONS.)
(Refer to 14 CFR Part 91.)
(Refer to AIM.)

MINIMUM VECTORING ALTITUDE (MVA)– The lowest MSL altitude at which an IFR aircraft will be vectored by a radar controller, except as otherwise authorized for radar approaches, departures, and missed approaches. The altitude meets IFR obstacle clearance criteria. It may be lower than the published MEA along an airway or J-route segment. It may be utilized for radar vectoring only upon the controller's determination that an adequate radar return is being received from the aircraft being controlled. Charts depicting minimum vectoring altitudes are normally available only to the controllers and not to pilots.

(Refer to AIM.)

MINUTES-IN-TRAIL– A specified interval between aircraft expressed in time. This method would more likely be utilized regardless of altitude.

MIS–

(See METEOROLOGICAL IMPACT STATEMENT.)

MISSED APPROACH–

a. A maneuver conducted by a pilot when an instrument approach cannot be completed to a

landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP.

b. A term used by the pilot to inform ATC that he/she is executing the missed approach.

c. At locations where ATC radar service is provided, the pilot should conform to radar vectors when provided by ATC in lieu of the published missed approach procedure.

(See MISSED APPROACH POINT.)

(Refer to AIM.)

MISSED APPROACH POINT– A point prescribed in each instrument approach procedure at which a missed approach procedure shall be executed if the required visual reference does not exist.

(See MISSED APPROACH.)

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MISSED APPROACH PROCEDURE [ICAO]– The procedure to be followed if the approach cannot be continued.

MISSED APPROACH SEGMENT–

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

MLDI–

(See METER LIST DISPLAY INTERVAL.)

MM–

(See MIDDLE MARKER.)

MOA–

(See MILITARY OPERATIONS AREA.)

MOCA–

(See MINIMUM OBSTRUCTION CLEARANCE ALTITUDE.)

MODE– The letter or number assigned to a specific pulse spacing of radio signals transmitted or received by ground interrogator or airborne transponder components of the Air Traffic Control Radar Beacon System (ATCRBS). Mode A (military Mode 3) and Mode C (altitude reporting) are used in air traffic control.

(See INTERROGATOR.)

(See RADAR.)

(See TRANSPONDER.)

(See ICAO term MODE.)

(Refer to AIM.)

MODE (SSR MODE) [ICAO]– The letter or number assigned to a specific pulse spacing of the interrogation signals transmitted by an interrogator. There are 4 modes, A, B, C and D specified in Annex 10, corresponding to four different interrogation pulse spacings.

MODE C INTRUDER ALERT– A function of certain air traffic control automated systems designed to alert radar controllers to existing or pending situations between a tracked target (known IFR or VFR aircraft) and an untracked target (unknown IFR or VFR aircraft) that requires immediate attention/action.

(See CONFLICT ALERT.)

MODEL AIRCRAFT– An unmanned aircraft that is: (1) capable of sustained flight in the atmosphere; (2) flown within visual line of sight of the person operating the aircraft; and (3) flown for hobby or recreational purposes.

MONITOR– (When used with communication transfer) listen on a specific frequency and stand by for instructions. Under normal circumstances do not establish communications.

MONITOR ALERT (MA)– A function of the TFMS that provides traffic management personnel with a tool for predicting potential capacity problems in individual operational sectors. The MA is an indication that traffic management personnel need to analyze a particular sector for actual activity and to determine the required action(s), if any, needed to control the demand.

MONITOR ALERT PARAMETER (MAP)– The number designated for use in monitor alert processing by the TFMS. The MAP is designated for each operational sector for increments of 15 minutes.

MOSAIC/MULTI–SENSOR MODE– Accepts positional data from multiple radar or ADS–B sites. Targets are displayed from a single source within a radar sort box according to the hierarchy of the sources assigned.

MOVEMENT AREA– The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading ramps and parking areas. At those airports/heliports with a tower, specific approval for entry onto the movement area must be obtained from ATC.

(See ICAO term MOVEMENT AREA.)

MOVEMENT AREA [ICAO]– That part of an aerodrome to be used for the takeoff, landing and taxiing of aircraft, consisting of the maneuvering area and the apron(s).

MOVING TARGET INDICATOR– An electronic device which will permit radar scope presentation only from targets which are in motion. A partial remedy for ground clutter.

MRA–

(See MINIMUM RECEPTION ALTITUDE.)

MSA–

(See MINIMUM SAFE ALTITUDE.)

MSAW–

(See MINIMUM SAFE ALTITUDE WARNING.)

MTI–

(See MOVING TARGET INDICATOR.)

MTR–

(See MILITARY TRAINING ROUTES.)

MULTICOM– A mobile service not open to public correspondence used to provide communications essential to conduct the activities being performed by or directed from private aircraft.

MULTIPLE RUNWAYS– The utilization of a dedicated arrival runway(s) for departures and a dedicated departure runway(s) for arrivals when feasible to reduce delays and enhance capacity.

MVA–

(See MINIMUM VECTORING ALTITUDE.)

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– Airspace over United States territory located within the North American continent between Canada and Mexico, including adjacent territorial waters outward to about boundaries of oceanic control areas (CTA)/Flight Information Regions (FIR).

(See FLIGHT INFORMATION REGION.)

NATIONAL FLIGHT DATA CENTER– A facility in Washington D.C., established by FAA to operate a central aeronautical information service for the collection, validation, and dissemination of aeronautical data in support of the activities of government, industry, and the aviation community. The information is published in the National Flight Data Digest.

(See NATIONAL FLIGHT DATA DIGEST.)

NATIONAL FLIGHT DATA DIGEST– A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notices to Airmen, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations.

NATIONAL SEARCH AND RESCUE PLAN– An interagency agreement which provides for the effective utilization of all available facilities in all types of search and rescue missions.

NAVAID–

(See NAVIGATIONAL AID.)

NAVAID CLASSES– VOR, VORTAC, and TACAN aids are classed according to their operational use. The three classes of NAVAIDs are:

a. T– Terminal.

b. L– Low altitude.

c. H– High altitude.

Note: The normal service range for T, L, and H class aids is found in the AIM. Certain operational requirements make it necessary to use some of these aids at greater service ranges than specified. Extended range is made possible through flight inspection determinations. Some aids also have lesser service range due to location, terrain, frequency protection, etc. Restrictions to service range are listed in Chart Supplement U.S.

NAVIGABLE AIRSPACE– Airspace at and above the minimum flight altitudes prescribed in the CFRs including airspace needed for safe takeoff and landing.

(Refer to 14 CFR Part 91.)

NAVIGATION REFERENCE SYSTEM (NRS)– The NRS is a system of waypoints developed for use within the United States for flight planning and navigation without reference to ground based navigational aids. The NRS waypoints are located in a grid pattern along defined latitude and longitude lines. The initial use of the NRS will be in the high altitude environment in conjunction with the High Altitude Redesign initiative. The NRS waypoints are intended for use by aircraft capable of point–to–point navigation.

NAVIGATION SPECIFICATION [ICAO]– A set of aircraft and flight crew requirements needed to support performance–based navigation operations within a defined airspace. There are two kinds of navigation specifications:

a. RNP specification. A navigation specification based on area navigation that includes the requirement for performance monitoring and alerting, designated by the prefix RNP; e.g., RNP 4, RNP APCH.

b. RNAV specification. A navigation specification based on area navigation that does not include the requirement for performance monitoring and alert-

ing, designated by the prefix RNAV; e.g., RNAV 5, RNAV 1.

Note: The Performance–based Navigation Manual (Doc 9613), Volume II contains detailed guidance on navigation specifications.

NAVIGATIONAL AID– Any visual or electronic device airborne or on the surface which provides point-to-point guidance information or position data to aircraft in flight.

(See AIR NAVIGATION FACILITY.)

NBCAP AIRSPACE–

(See NATIONAL BEACON CODE ALLOCATION PLAN AIRSPACE.)

NDB–

(See NONDIRECTIONAL BEACON.)

NEGATIVE– "No," or "permission not granted," or "that is not correct."

NEGATIVE CONTACT– Used by pilots to inform ATC that:

a. Previously issued traffic is not in sight. It may be followed by the pilot's request for the controller to provide assistance in avoiding the traffic.

b. They were unable to contact ATC on a particular frequency.

NFDC–

(See NATIONAL FLIGHT DATA CENTER.)

NFDD–

(See NATIONAL FLIGHT DATA DIGEST.)

NIGHT– The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

(See ICAO term NIGHT.)

NIGHT [ICAO]– The hours between the end of evening civil twilight and the beginning of morning civil twilight or such other period between sunset and sunrise as may be specified by the appropriate authority.

Note: Civil twilight ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

NO GYRO APPROACH– A radar approach/vector provided in case of a malfunctioning gyro-compass or directional gyro. Instead of providing the pilot with headings to be flown, the controller observes the radar track and issues control instructions "turn right/left" or "stop turn" as appropriate.

(Refer to AIM.)

NO GYRO VECTOR–

(See NO GYRO APPROACH.)

NO TRANSGRESSION ZONE (NTZ)– The NTZ is a 2,000 foot wide zone, located equidistant between parallel runway or SOIA final approach courses in which flight is normally not allowed.

NONAPPROACH CONTROL TOWER– Authorizes aircraft to land or takeoff at the airport controlled by the tower or to transit the Class D airspace. The primary function of a nonapproach control tower is the sequencing of aircraft in the traffic pattern and on the landing area. Nonapproach control towers also separate aircraft operating under instrument flight rules clearances from approach controls and centers. They provide ground control services to aircraft, vehicles, personnel, and equipment on the airport movement area.

NONCOMMON ROUTE/PORTION– That segment of a North American Route between the inland navigation facility and a designated North American terminal.

NONCOMPOSITE SEPARATION– Separation in accordance with minima other than the composite separation minimum specified for the area concerned.

NONDIRECTIONAL BEACON– An L/MF or UHF radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his/her bearing to or from the radio beacon and "home" on or track to or from the station. When the radio beacon is installed in conjunction with the Instrument Landing System marker, it is normally called a Compass Locator.

(See AUTOMATIC DIRECTION FINDER.)

(See COMPASS LOCATOR.)

NONMOVEMENT AREAS– Taxiways and apron (ramp) areas not under the control of air traffic.

NONPRECISION APPROACH–

(See NONPRECISION APPROACH PROCEDURE.)

NONPRECISION APPROACH PROCEDURE– A standard instrument approach procedure in which no

electronic glideslope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

NONRADAR– Precedes other terms and generally means without the use of radar, such as:

a. Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.

(See FINAL APPROACH COURSE.)
(See FINAL APPROACH-IFR.)
(See INSTRUMENT APPROACH PROCEDURE.)
(See RADAR APPROACH.)

b. Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.

(See APPROACH CONTROL FACILITY.)
(See APPROACH CONTROL SERVICE.)

c. Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.

(See RADAR ARRIVAL.)
(See RADAR SERVICE.)

d. Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.

(See RADAR ROUTE.)

e. Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.

(See RADAR SEPARATION.)
(See ICAO term NONRADAR SEPARATION.)

NONRADAR SEPARATION [ICAO]– The separation used when aircraft position information is derived from sources other than radar.

NON–RESTRICTIVE ROUTING (NRR)– Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground–based NAVAIDs.

NOPAC–
(See NORTH PACIFIC.)

NORDO (No Radio)– Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."
(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)– The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE– A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

a. Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

b. Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

c. Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

d. Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)– The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)– That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 *North Atlantic Operations and Airspace Manual* provides detailed information on related aircraft and operational requirements.

NORTH MARK– A beacon data block sent by the host computer to be displayed by the ARTS on a 360 degree bearing at a locally selected radar azimuth and distance. The North Mark is used to ensure correct

range/azimuth orientation during periods of CENRAP.

NORTH PACIFIC– An organized route system between the Alaskan west coast and Japan.

NOT STANDARD– Varying from what is expected or published. For use in NOTAMs only.

NOT STD-
(See NOT STANDARD)

NOTAM–
(See NOTICE TO AIRMEN.)

NOTAM [ICAO]– A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.

a. I Distribution– Distribution by means of telecommunication.

b. II Distribution– Distribution by means other than telecommunications.

NOTICE TO AIRMEN– A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

NOTAM(D)– A NOTAM given (in addition to local dissemination) distant dissemination beyond the area of responsibility of the Flight Service Station. These NOTAMs will be stored and available until canceled.

c. FDC NOTAM– A NOTAM regulatory in nature, transmitted by USNOF and given system wide dissemination.
(See ICAO term NOTAM.)

NOTICES TO AIRMEN PUBLICATION– A publication issued every 28 days, designed primarily for the pilot, which contains current NOTAM information considered essential to the safety of flight as well as supplemental data to other aeronautical publications. The contraction NTAP is used in NOTAM text.
(See NOTICE TO AIRMEN.)

NRR–
(See NON–RESTRICTIVE ROUTING.)

NRS–
(See NAVIGATION REFERENCE SYSTEM.)

NTAP–
(See NOTICES TO AIRMEN PUBLICATION.)

NUMEROUS TARGETS VICINITY (LOCATION)– A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually.
(See TRAFFIC ADVISORIES.)

O

OBSTACLE– An existing object, object of natural growth, or terrain at a fixed geographical location or which may be expected at a fixed location within a prescribed area with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE DEPARTURE PROCEDURE (ODP)– A preplanned instrument flight rule (IFR) departure procedure printed for pilot use in textual or graphic form to provide obstruction clearance via the least onerous route from the terminal area to the appropriate en route structure. ODPs are recommended for obstruction clearance and may be flown without ATC clearance unless an alternate departure procedure (SID or radar vector) has been specifically assigned by ATC.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See STANDARD INSTRUMENT DEPARTURES.)

(Refer to AIM.)

OBSTACLE FREE ZONE– The OFZ is a three dimensional volume of airspace which protects for the transition of aircraft to and from the runway. The OFZ clearing standard precludes taxiing and parked airplanes and object penetrations, except for frangible NAVAID locations that are fixed by function. Additionally, vehicles, equipment, and personnel may be authorized by air traffic control to enter the area using the provisions of FAAO JO 7110.65, Para 3–1–5, VEHICLES/EQUIPMENT/ PERSONNEL ON RUNWAYS. The runway OFZ and when applicable, the inner-approach OFZ, and the inner-transitional OFZ, comprise the OFZ.

a. Runway OFZ. The runway OFZ is a defined volume of airspace centered above the runway. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The runway OFZ extends 200 feet beyond each end of the runway. The width is as follows:

1. For runways serving large airplanes, the greater of:

(a) 400 feet, or

(b) 180 feet, plus the wingspan of the most demanding airplane, plus 20 feet per 1,000 feet of airport elevation.

2. For runways serving only small airplanes:

(a) 300 feet for precision instrument runways.

(b) 250 feet for other runways serving small airplanes with approach speeds of 50 knots, or more.

(c) 120 feet for other runways serving small airplanes with approach speeds of less than 50 knots.

b. Inner-approach OFZ. The inner-approach OFZ is a defined volume of airspace centered on the approach area. The inner-approach OFZ applies only to runways with an approach lighting system. The inner-approach OFZ begins 200 feet from the runway threshold at the same elevation as the runway threshold and extends 200 feet beyond the last light unit in the approach lighting system. The width of the inner-approach OFZ is the same as the runway OFZ and rises at a slope of 50 (horizontal) to 1 (vertical) from the beginning.

c. Inner-transitional OFZ. The inner transitional surface OFZ is a defined volume of airspace along the sides of the runway and inner-approach OFZ and applies only to precision instrument runways. The inner-transitional surface OFZ slopes 3 (horizontal) to 1 (vertical) out from the edges of the runway OFZ and inner-approach OFZ to a height of 150 feet above the established airport elevation.

(Refer to AC 150/5300-13, Chapter 3.)

(Refer to FAAO JO 7110.65, Para 3–1–5, VEHICLES/EQUIPMENT/PERSONNEL ON RUNWAYS.)

OBSTRUCTION– Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, Subpart C.

OBSTRUCTION LIGHT– A light or one of a group of lights, usually red or white, frequently mounted on a surface structure or natural terrain to warn pilots of the presence of an obstruction.

OCEANIC AIRSPACE– Airspace over the oceans of the world, considered international airspace, where oceanic separation and procedures per the International Civil Aviation Organization are applied. Responsibility for the provisions of air traffic control

service in this airspace is delegated to various countries, based generally upon geographic proximity and the availability of the required resources.

OCEANIC ERROR REPORT– A report filed when ATC observes an Oceanic Error as defined by FAAO 7110.82, Reporting Oceanic Errors.

OCEANIC PUBLISHED ROUTE– A route established in international airspace and charted or described in flight information publications, such as Route Charts, DOD Enroute Charts, Chart Supplements, NOTAMs, and Track Messages.

OCEANIC TRANSITION ROUTE– An ATS route established for the purpose of transitioning aircraft to/from an organized track system.

ODP–
(See OBSTACLE DEPARTURE PROCEDURE.)

OFF COURSE– A term used to describe a situation where an aircraft has reported a position fix or is observed on radar at a point not on the ATC-approved route of flight.

OFF-ROUTE VECTOR– A vector by ATC which takes an aircraft off a previously assigned route. Altitudes assigned by ATC during such vectors provide required obstacle clearance.

OFFSET PARALLEL RUNWAYS– Staggered runways having centerlines which are parallel.

OFFSHORE/CONTROL AIRSPACE AREA– That portion of airspace between the U.S. 12 NM limit and the oceanic CTA/FIR boundary within which air traffic control is exercised. These areas are established to provide air traffic control services. Offshore/Control Airspace Areas may be classified as either Class A airspace or Class E airspace.

OFT–
(See OUTER FIX TIME.)

OM–
(See OUTER MARKER.)

ON COURSE–

a. Used to indicate that an aircraft is established on the route centerline.

b. Used by ATC to advise a pilot making a radar approach that his/her aircraft is lined up on the final approach course.
(See ON-COURSE INDICATION.)

ON-COURSE INDICATION– An indication on an instrument, which provides the pilot a visual means of determining that the aircraft is located on the centerline of a given navigational track, or an indication on a radar scope that an aircraft is on a given track.

ONE-MINUTE WEATHER– The most recent one minute updated weather broadcast received by a pilot from an uncontrolled airport ASOS/AWSS/AWOS.

ONER–
(See OCEANIC NAVIGATIONAL ERROR REPORT.)

OPERATIONAL–
(See DUE REGARD.)

OPERATIONS SPECIFICATIONS [ICAO]– The authorizations, conditions and limitations associated with the air operator certificate and subject to the conditions in the operations manual.

OPPOSITE DIRECTION AIRCRAFT– Aircraft are operating in opposite directions when:

a. They are following the same track in reciprocal directions; or

b. Their tracks are parallel and the aircraft are flying in reciprocal directions; or

c. Their tracks intersect at an angle of more than 135°.

OPTION APPROACH– An approach requested and conducted by a pilot which will result in either a touch-and-go, missed approach, low approach, stop-and-go, or full stop landing. Pilots should advise ATC if they decide to remain on the runway, of any delay in their stop and go, delay clearing the runway, or are unable to comply with the instruction(s).
(See CLEARED FOR THE OPTION.)
(Refer to AIM.)

ORGANIZED TRACK SYSTEM– A series of ATS routes which are fixed and charted; i.e., CEP, NOPAC, or flexible and described by NOTAM; i.e., NAT TRACK MESSAGE.

OROCA– An off-route altitude which provides obstruction clearance with a 1,000 foot buffer in nonmountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

OTR–
(See OCEANIC TRANSITION ROUTE.)

OTS–
(See ORGANIZED TRACK SYSTEM.)

OUT– The conversation is ended and no response is expected.

OUT OF SERVICE–When a piece of equipment, a system, a facility or a service is not operational, certified (if required) and immediately "available" for Air Traffic or public use.

OUTER AREA (associated with Class C airspace)– Nonregulatory airspace surrounding designated Class C airspace airports wherein ATC provides radar vectoring and sequencing on a full-time basis for all IFR and participating VFR aircraft. The service provided in the outer area is called Class C service which includes: IFR/IFR–IFR separation; IFR/VFR–traffic advisories and conflict resolution; and VFR/VFR–traffic advisories and, as appropriate, safety alerts. The normal radius will be 20 nautical miles with some variations based on site-specific requirements. The outer area extends outward from the primary Class C airspace airport and extends from the lower limits of radar/radio coverage up to the ceiling of the approach control's delegated airspace excluding the Class C charted area and other airspace as appropriate.
(See CONFLICT RESOLUTION.)
(See CONTROLLED AIRSPACE.)

OUTER COMPASS LOCATOR–
(See COMPASS LOCATOR.)

OUTER FIX– A general term used within ATC to describe fixes in the terminal area, other than the final approach fix. Aircraft are normally cleared to these fixes by an Air Route Traffic Control Center or an Approach Control Facility. Aircraft are normally cleared from these fixes to the final approach fix or final approach course.

OR

OUTER FIX– An adapted fix along the converted route of flight, prior to the meter fix, for which crossing times are calculated and displayed in the metering position list.

OUTER FIX ARC– A semicircle, usually about a 50–70 mile radius from a meter fix, usually in high altitude, which is used by CTAS/HOST to calculate outer fix times and determine appropriate sector meter list assignments for aircraft on an established arrival route that will traverse the arc.

OUTER FIX TIME– A calculated time to depart the outer fix in order to cross the vertex at the ACLT. The time reflects descent speed adjustments and any applicable delay time that must be absorbed prior to crossing the meter fix.

OUTER MARKER– A marker beacon at or near the glideslope intercept altitude of an ILS approach. It is keyed to transmit two dashes per second on a 400 Hz tone, which is received aurally and visually by compatible airborne equipment. The OM is normally located four to seven miles from the runway threshold on the extended centerline of the runway.
(See INSTRUMENT LANDING SYSTEM.)
(See MARKER BEACON.)
(Refer to AIM.)

OVER– My transmission is ended; I expect a response.

OVERHEAD MANEUVER– A series of predetermined maneuvers prescribed for aircraft (often in formation) for entry into the visual flight rules (VFR) traffic pattern and to proceed to a landing. An overhead maneuver is not an instrument flight rules (IFR) approach procedure. An aircraft executing an overhead maneuver is considered VFR and the IFR flight plan is cancelled when the aircraft reaches the "initial point" on the initial approach portion of the maneuver. The pattern usually specifies the following:

a. The radio contact required of the pilot.

b. The speed to be maintained.

c. An initial approach 3 to 5 miles in length.

d. An elliptical pattern consisting of two 180 degree turns.

e. A break point at which the first 180 degree turn is started.

f. The direction of turns.

g. Altitude (at least 500 feet above the conventional pattern).

h. A “Roll-out” on final approach not less than 1/4 mile from the landing threshold and not less than 300 feet above the ground.

OVERLYING CENTER– The ARTCC facility that is responsible for arrival/departure operations at a specific terminal.

W

WA–
(See AIRMET.)
(See WEATHER ADVISORY.)

WAAS–
(See WIDE-AREA AUGMENTATION SYSTEM.)

WAKE TURBULENCE– Phenomena resulting from the passage of an aircraft through the atmosphere. The term includes vortices, thrust stream turbulence, jet blast, jet wash, propeller wash, and rotor wash both on the ground and in the air.
(See AIRCRAFT CLASSES.)
(See JET BLAST.)
(See VORTICES.)
(Refer to AIM.)

WARNING AREA–
(See SPECIAL USE AIRSPACE.)

WAYPOINT– A predetermined geographical position used for route/instrument approach definition, progress reports, published VFR routes, visual reporting points or points for transitioning and/or circumnavigating controlled and/or special use airspace, that is defined relative to a VORTAC station or in terms of latitude/longitude coordinates.

WEATHER ADVISORY– In aviation weather forecast practice, an expression of hazardous weather conditions not predicted in the area forecast, as they affect the operation of air traffic and as prepared by the NWS.
(See AIRMET.)
(See SIGMET.)

WHEN ABLE–

a. In conjunction with ATC instructions, gives the pilot the latitude to delay compliance until a condition or event has been reconciled. Unlike "pilot discretion," when instructions are prefaced "when able," the pilot is expected to seek the first opportunity to comply.

b. In conjunction with a weather deviation clearance, requires the pilot to determine when he/she is clear of weather, then execute ATC instructions.

c. Once a maneuver has been initiated, the pilot is expected to continue until the specifications of the instructions have been met. "When able," should not be used when expeditious compliance is required.

WIDE-AREA AUGMENTATION SYSTEM (WAAS)– The WAAS is a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

WIDE AREA MULTILATERATION (WAM)– A distributed surveillance technology which may utilize any combination of signals from Air Traffic Control Radar Beacon System (ATCRBS) (Modes A and C) and Mode S transponders, and ADS-B transmissions. Multiple geographically dispersed ground sensors measure the time-of-arrival of the transponder messages. Aircraft position is determined by joint processing of the time-difference-of-arrival (TDOA) measurements computed between a reference and the ground stations' measured time-of-arrival.

WILCO– I have received your message, understand it, and will comply with it.

WIND GRID DISPLAY– A display that presents the latest forecasted wind data overlaid on a map of the ARTCC area. Wind data is automatically entered and updated periodically by transmissions from the National Weather Service. Winds at specific altitudes, along with temperatures and air pressure can be viewed.

WIND SHEAR– A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

WIND SHEAR ESCAPE– An unplanned abortive maneuver initiated by the pilot in command (PIC) as a result of onboard cockpit systems. Wind shear escapes are characterized by maximum thrust climbs in the low altitude terminal environment until wind shear conditions are no longer detected.

WING TIP VORTICES–
(See VORTICES.)

WORDS TWICE–

a. As a request: "Communication is difficult. Please say every phrase twice."

b. As information: "Since communications are difficult, every phrase in this message will be spoken twice."

WS–
(See SIGMET.)
(See WEATHER ADVISORY.)

WST–
(See CONVECTIVE SIGMET.)
(See WEATHER ADVISORY.)

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BRIEFING GUIDE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Initiated By: AJV−0
Vice President, Mission Support Services

Table of Contents

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13−2−1. DESCRIPTION
13−2−5. COORDINATION

2. BACKGROUND: Advanced Technologies and Oceanic Procedures (ATOP) is the automation platform that is used at the FAA's Oceanic Air Route Traffic Control Centers: New York Center, Oakland Center, and Anchorage Center. The moniker "OCEAN21" has been used to refer to ATOP; this nickname is being removed from air traffic documentation and replaced with the correct term "ATOP."

3. CHANGE:

OLD	NEW
1−2−6. ABBREVIATIONS	**1−2−6. ABBREVIATIONS**
TBL 1−2−1 **FAA Order JO 7110.65 Abbreviations**	***TBL 1−2−1*** **FAA Order JO 7110.65 Abbreviations**
Add	**ATOP − Advanced Technologies and Oceanic Procedures**

OLD	NEW
2−3−3. OCEANIC DATA ENTRIES	**2−3−3. OCEANIC DATA ENTRIES**
Title though ***FIG 2−3−3***	No Change
a. The Ocean21 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:	**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:

OLD	NEW
8−7−3. LONGITUDINAL SEPARATION	**8−7−3. LONGITUDINAL SEPARATION**
Title through **e1(a)**	No Change
(b) The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, OCEAN21).	**(b)** The required ADS−C periodic reports are maintained and monitored by an automated flight data processor (for example, **ATOP**).
FIG 8−7−1 through **e2(b)**	No Change
NOTE− *Ocean21 has been designed to check for the above criteria prior to allowing the minima to be provided.*	***NOTE−*** ***ATOP*** *has been designed to check for the above criteria prior to allowing the minima to be provided.*

OLD

8–7–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. *30 NM* to RNP4 approved aircraft operating within airspace designated for RNP4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADSC contracts are maintained and monitored by an automated flight data processor (e.g., Ocean21).

NEW

8–7–4. LATERAL SEPARATION

No Change

a. *30 NM* to RNP4 approved aircraft operating within airspace designated for RNP4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADSC contracts are maintained and monitored by an automated flight data processor (e.g., **ATOP**).

OLD

8–8–3. LONGITUDINAL SEPARATION

Title through **f1(a)**

(b) The required ADSC periodic reports are maintained and monitored by an automated flight data processor (for example, OCEAN21).

FIG 8–8–1 through **f2(b)**

NOTE–
Ocean21 has been designed to check for the above criteria prior to allowing the minima to be provided.

NEW

8–8–3. LONGITUDINAL SEPARATION

No Change

(b) The required ADSC periodic reports are maintained and monitored by an automated flight data processor (for example, **ATOP**).

No Change

NOTE–
ATOP *has been designed to check for the above criteria prior to allowing the minima to be provided.*

OLD

8–8–4. LATERAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 4, Lateral Separation, apply the following:

a. *30 NM* to RNP4 approved aircraft operating within airspace designated for RNP4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADSC contracts are maintained and monitored by an automated flight data processor (e.g., Ocean21).

NEW

8–8–4. LATERAL SEPARATION

No Change

a. *30 NM* to RNP4 approved aircraft operating within airspace designated for RNP4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADSC contracts are maintained and monitored by an automated flight data processor (e.g., **ATOP**).

OLD

8–9–3. LONGITUDINAL SEPARATION

Title through **c1(a)**

(b) The required ADS–C periodic reports are maintained and monitored by an automated flight data processor (e.g., Ocean21).

TBL 8–9–1 through **c2(b)**

NOTE–
Ocean21 has been designed to check for the above criteria prior to allowing the minima to be provided.

NEW

8–9–3. LONGITUDINAL SEPARATION

No Change

(b) The required ADSC periodic reports are maintained and monitored by an automated flight data processor (e.g., **ATOP**).

No Change

NOTE–
ATOP *has been designed to check for the above criteria prior to allowing the minima to be provided.*

OLD

8–9–4. LATERAL SEPARATION

Title through **a**

b. Apply *30 NM* to RNP–4 approved aircraft operating within airspace designated for RNP–4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (e.g., Ocean21).

NEW

8–9–4. LATERAL SEPARATION

No Change

b. Apply *30 NM* to RNP–4 approved aircraft operating within airspace designated for RNP–4 when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (e.g., **ATOP**).

OLD

8–10–3. LONGITUDINAL SEPARATION

Title through **c1(a)**

(b) The required ADSC periodic reports are maintained and monitored by an automated flight data processor (for example, Ocean21).

TBL 8–10–1 through **c2(b)**

NOTE–
Ocean21 has been designed to check for the above criteria prior to allowing the minima to be provided.

NEW

8–10–3. LONGITUDINAL SEPARATION

No Change

(b) The required ADSC periodic reports are maintained and monitored by an automated flight data processor (for example, **ATOP**).

No Change

NOTE–
ATOP *has been designed to check for the above criteria prior to allowing the minima to be provided.*

OLD

8–10–4. LATERAL SEPARATION

Title through **a**

b. *30 NM* to RNP–4 approved aircraft operating within the Anchorage Oceanic CTA and Anchorage Continental CTA when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (for example, Ocean21).

NEW

8–10–4. LATERAL SEPARATION

No Change

b. *30 NM* to RNP–4 approved aircraft operating within the Anchorage Oceanic CTA and Anchorage Continental CTA when direct controller/pilot communications, via voice or Controller Pilot Data Link Communications (CPDLC), and the required ADS–C contracts are maintained and monitored by an automated flight data processor (for example, **ATOP**).

OLD

Chapter 13. DECISION SUPPORT TOOLS

Section 2. Ocean21 – Oceanic

The following procedures are applicable to the operation of the Ocean21 Oceanic Air Traffic Control (ATC) System.

13–2–1. DESCRIPTION

a. The Ocean21 ATC System is utilized in designated en route/oceanic airspace. Ocean21 includes both surveillance and flight data processing, which provides the controllers with automated decision support tools to establish, monitor and maintain separation between aircraft, and aircraft to airspace and terrain.

b. Ocean21 capabilities include:

NEW

Chapter 13. DECISION SUPPORT TOOLS

Section 2. ATOP – Oceanic

The following procedures are applicable to theoperation of the **ATOP** Oceanic Air Traffic Control (ATC) System.

13–2–1. DESCRIPTION

a. The **ATOP** ATC System is utilized in designated en route/oceanic airspace. **ATOP** includes both surveillance and flight data processing, which provides the controllers with automated decision support tools to establish, monitor and maintain separation between aircraft, and aircraft to airspace and terrain.

b. ATOP capabilities include:

OLD

13–2–5. COORDINATION

In addition to the requirements set forth in Chapter 8, Offshore/Oceanic Procedures, Section 2, Coordination, automated coordination must constitute complete coordination between Ocean21 sectors, both internally and between sectors across adjacent Ocean21 facilities, except:

NEW

13–2–5. COORDINATION

In addition to the requirements set forth in Chapter 8, Offshore/Oceanic Procedures, Section 2, Coordination, automated coordination must constitute complete coordination between **ATOP** sectors, both internally and between sectors across adjacent **ATOP** facilities, except:

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1. PARAGRAPH NUMBER AND TITLE:
1–2–6. ABBREVIATIONS
4–8–1. APPROACH CLEARANCE
5–10–1. APPLICATION

2. BACKGROUND: The Flight Technologies and Procedures Division, Flight Operations Branch (AFS–410) believes information about Enhanced Flight Vision System (EFVS) operations needs to be communicated to Air Traffic Controllers and sought ATO assistance in determining what method would best accomplish this goal. EFVS operations have been authorized since 2004 and are an important part of several operational improvements specified in the FAA's NextGen Plan. EFVS enables approach operations in reduced visibilities on a greater number of approach procedure types, reduces the infrastructure necessary to support low visibility operations, enhances situation and position awareness, provides visual cues to maintain a stabilized approach, and minimizes missed approaches. This increases access, efficiency, and throughput at many airports when low visibility is the limiting factor.

3. CHANGE:

OLD

1–2–6. ABBREVIATIONS

TBL 1–2–1

FAA Order JO 7110.65 Abbreviations

Add

NEW

1–2–6. ABBREVIATIONS

TBL 1–2–1

FAA Order JO 7110.65 Abbreviations

EFVS – Enhanced Flight Vision System

OLD	NEW
4–8–1. APPROACH CLEARANCE	**4–8–1. APPROACH CLEARANCE**
Title through **a6** ***NOTE 10***	No Change
Add	***11. There are some systems, for example, Enhanced Flight Vision System (EFVS), which allow aircraft to descend below published final approach minimums.***
Add	***REFERENCE–*** ***14 CFR § 91.175(l)*** ***P/CG Term – EFVS***

OLD	NEW
5–10–1. APPLICATION	**5–10–1. APPLICATION**
Title through **b** ***NOTE***	No Change
REFERENCE– *FAAO JO 7110.65, Para 5 –9 –2, Final Approach Course Interception.* *FAAO JO 7110.65, Para 5 –12 –10, Elevation Failure.*	***REFERENCE–*** *FAAO JO 7110.65, Para 5 –9 –2, Final Approach Course Interception.* *FAAO JO 7110.65, Para 5 –12 –10, Elevation Failure.* ***FAAO JO 7110.65, Para 4–8–1a, Approach Clearance*** ***P/CG Term – EFVS***

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1. PARAGRAPH NUMBER AND TITLE:
1–2–6. ABBREVIATIONS
8–7–4. LATERAL SEPARATION
8–8–4. LATERAL SEPARATION

2. BACKGROUND: The International Civil Aviation Organization (ICAO) North Atlantic Region (NAT) has entered a change into the ICAO Doc 7030, Regional Supplementary Procedures to replace the designation of Minimum Navigation Performance Specification (MNPS) with the designation High Level Airspace (HLA). Airframes that currently have MNPS authorization will be allowed to operate in the NAT HLA under that authorization until 2020. All who wish to operate in NAT HLA, who are not grandfathered under MNPS, will need an RNP 4 or RNP 10 approval.

3. CHANGE:

OLD	NEW
1–2–6. ABBREVIATIONS	**1–2–6. ABBREVIATIONS**
TBL 1–2–1 **FAA Order JO 7110.65 Abbreviations**	No Change
Add	**NAT HLA – North Atlantic High Level Airspace**

OLD	NEW
8–7–4. LATERAL SEPARATION	**8–7–4. LATERAL SEPARATION**
Title through **c1**	No Change
2. Aircraft which meet the MNPS and which:	**2.** Aircraft which **have** MNPS **or NAT HLA authorization** and which:
(a) Operate within MNPS airspace; or	**(a)** Operate within **NAT HLA**; or
(b) Are in transit to or from MNPS airspace; or	**(b)** Are in transit to or from **NAT HLA**; or
(c) Operate for part of their flight within, above, or below MNPS airspace**.**	**(c)** Operate for part of their flight within, above, or below **NAT HLA.**

OLD	NEW
8–8–4. LATERAL SEPARATION	**8–8–4. LATERAL SEPARATION**
Title through **c2**	No Change
3. Aircraft which meet the MNPS and which:	**3.** Aircraft which **have** MNPS **or NAT HLA authorization** and which:
(a) Operate within MNPS airspace; or	**(a)** Operate within **NTA HLA**; or
(b) Are in transit to or from MNPS airspace; or	**(b)** Are in transit to or from **NAT HLA**; or
(c) Operate for part of their flight within, above, or below MNPS airspace.	**(c)** Operate for part of their flight within, above, or below **NAT HLA.**

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1. PARAGRAPH NUMBER AND TITLE: 2–1–1. ATC SERVICE

2. BACKGROUND: This item was provided by industry stakeholders to be addressed by the 7110.65 Revision Steering Committee. There was a desire to improve the readability and clarity of paragraph 2–1–1.

3. CHANGE:

OLD	NEW
2–1–1. ATC SERVICE	**2–1–1. ATC SERVICE**
The primary purpose of the ATC system is to prevent a collision between aircraft operating in the system and to provide a safe, orderly and expeditious flow of traffic, and to provide support for National Security and Homeland Defense. In addition to its primary function, the ATC system has the capability to provide, with certain limitations, additional services. The ability to provide additional services is limited by many factors, such as the volume of traffic, frequency congestion, quality of radar, controller workload, higher priority duties, and the pure physical inability to scan and detect those situations that fall in this category. It is recognized that these services cannot be provided in cases in which the provision of services is precluded by the above factors. Consistent with the aforementioned conditions, controllers must provide additional service procedures to the extent permitted by higher priority duties and other circumstances. The provision of additional services is not optional on the part of the controller, but rather is required when the work situation permits. Provide air traffic control service in accordance with the procedures and minima in this order except when:	Delete
Add	**a. The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.**
Add	**b. In addition to its primary purpose, the ATC system also:**

Add	**1. Provides a safe, orderly, and expeditious flow of air traffic.**
Add	**2. Supports National Security and Homeland Defense missions.**
Add	**c. The ATC system must provide certain additional services to the extent permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:**
Add	**1. Volume of traffic.**
Add	**2. Frequency congestion.**
Add	**3. Quality of surveillance.**
Add	**4. Controller workload.**
Add	**5. Higher priority duties.**
Add	**6. The physical inability to scan and detect situations falling in this category.**
Add	**d. Controllers must provide air traffic control service in accordance with the procedures and minima in this order, except when one or more of the following conditions exists:**
a. A deviation is necessary to conform with ICAO Documents, National Rules of the Air, or special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions or:	**1.** A deviation is necessary to conform with ICAO Documents, National Rules of the Air, or special agreements where the U.S. provides air traffic control service in airspace outside the U.S. and its possessions or:
NOTE– *Pilots are required to abide by CFRs or other applicable regulations regardless of the application of any procedure or minima in this order.*	No Change
b. Other procedures/minima are prescribed in a letter of agreement, FAA directive, or a military document, or:	**2.** Other procedures or minima are specified in a Letter of Agreement, FAA directive, or military document, or:
NOTE– *These procedures may include altitude reservations, air refueling, fighter interceptor operations, law enforcement, etc.*	No Change
REFERENCE– *FAAO JO 7110.65, Para 1–1–9 Procedural Letters of Agreement.*	No Change
c. A deviation is necessary to assist an aircraft when an emergency has been declared.	**3.** A deviation is necessary to assist an aircraft when an emergency has been declared.
REFERENCE– *FAAO JO 7110.65, Para 2–1–6 Safety Alert.* *FAAO JO 7110.65, Chapter 10 Emergencies.* *FAAO JO 7110.65, Para 5–1–8 Merging Target Procedures.*	No Change
Add	**e. Air Traffic Control services are not provided for model aircraft operating in the NAS.**

Add	***NOTE–*** ***This does not relieve model aircraft operators from the requirements of section 336 of Public Law 112–95 and 14 CFR Part 101 including the notification requirement.***
Add	***NOTE–*** ***This does not prohibit ATC from providing services to civil and public UAS.***
Add	***REFERENCE–*** ***P/CG Term – Model Aircraft.***

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1. PARAGRAPH NUMBER AND TITLE:
1–2–6. ABBREVIATIONS
2–1–17. RADIO COMMUNICATIONS

2. BACKGROUND: The June 2010 memo, "Quality Control – Aircraft Communication Status Reporting," describes the circumstances leading to the introduction of the requirement for Air Traffic Controllers to "use an approved visual method to maintain awareness of the communication status of aircraft." A No–Radio Communication (NORAC) joint FAA/NATCA workgroup was formed to address the issue of NORAC aircraft in the National Airspace System. The workgroup agreed, in the short–term, that "Controllers shall adopt an individualized technique to provide a visual indication of the communication status of an aircraft under their jurisdiction." The group listed several methods to meet this requirement. As a long–term strategy the workgroup proposed the use of color in the display system replacement (DSR) data block or the use of a symbol associated with the data block. Neither method was practical in the DSR system. With the deployment of the En Route Automation Modernization (ERAM) platform, the solutions are now possible. A computer/human interface (CHI) group determined the most viable solution was the use of a symbol associated with the data block. This functionality will be introduced into ERAM in November 2016.

3. CHANGE:

OLD	**NEW**
1–2–6. ABBREVIATIONS	**1–2–6. ABBREVIATIONS**
TBL 1–2–1 **FAA Order JO 7110.65 Abbreviations**	No Change
Add	**VCI – Voice Communication Indicator**

OLD	**NEW**
2–1–17. RADIO COMMUNICATIONS	**2–1–17. RADIO COMMUNICATIONS**
Title through **c**	No Change
Add	**d. ERAM facilities, beginning with initial audio contact with an aircraft, must utilize the voice communication indicator to reflect the current status of voice communications.**
d through **g**	Reletter **e** through **h**

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1. PARAGRAPH NUMBER AND TITLE: 2−1−28. RVSM OPERATIONS

2. BACKGROUND: The visual indicator alerting controllers to non−RVSM eligible aircraft is activated by the entry in Field 10a of the ICAO flight plan. In the past when it became necessary to modify an aircraft's RVSM eligibility, controllers would amend the aircraft's equipment suffix. Automation now translates the increased Performance Based Navigation (PBN) capabilities, including RVSM eligibility, into the proper equipment suffix by reading the equipment string found in Field 10a. Simply revising the equipment suffix will delete the NAV/COMM indicators in the equipment field of the ICAO flight plan. Controllers are trained to make changes to the equipment string and allow the system to make the translation to the proper equipment suffix.

3. CHANGE:

OLD	NEW
2−1−28. RVSM OPERATIONS	**2−1−28. RVSM OPERATIONS**
Title through **e2**	No Change
f. In the event of a change to an aircraft's navigational capability amend the equipment suffix in order to properly identify non−RVSM aircraft on the controller display.	**f.** In the event of a change to an aircraft's **RVSM eligibility,** amend the **RVSM qualifier ("W") in the ICAO equipment string** in order to properly identify non−RVSM aircraft on the controller display.
Add	***NOTE−*** ***Changing the equipment suffix instead of amending the equipment string may result in incorrect revisions to other ICAO qualifiers.***
Add	***REFERENCE−*** ***AIM Para 5−1−9, International Flight Plan (FAA Form 7233−4) IFR Flights (For Domestic or International Flights)*** ***AIM TBL 5−1−4 Aircraft COM, NAV, and Approach Equipment Qualifiers***

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1. PARAGRAPH NUMBER AND TITLE: 2−6−3. PIREP INFORMATION

2. BACKGROUND: The proposed change to PIREP dissemination is part of an effort of the Flight Services Directorate to modernize and streamline service delivery in order to increase efficiencies and value for its stakeholders. Flight Services can achieve its objectives by realigning some activities within the Air Traffic Organization (ATO), eliminating obsolete activities, and expanding the use of existing and developing technologies for remaining services.

3. CHANGE:

OLD	NEW
2−6−3. PIREP INFORMATION	**2−6−3. PIREP INFORMATION**
Title through **d3(a)**	No Change
(b) The FSS serving the area in which the report was obtained.	**(b)** The **FLM/CIC for long line dissemination via an FAA approved electronic system (for example, AIS−R, or similar systems); or,**
Add	**(c) Outside Alaska: The overlying ARTCC's Flight Data Unit for long−line dissemination; or,**
Add	**(d) Alaska Only: The FSS serving the area in which the report was obtained.**

NOTE– *The FSS is responsible for long line dissemination.*	***NOTE–*** *The FSS **in Alaska** is responsible for long line dissemination.*
Add	***REFERENCE–*** ***FAAO JO 7110.65, Para 2–1–2, Duty Priority.***
(c) and **(d)**	Reletter **(e)** and **(f)**

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1. PARAGRAPH NUMBER AND TITLE: 2–9–3. CONTENT

2. BACKGROUND: Daily, pilots and controllers rely on Automatic Terminal Information Service (ATIS) and must confirm relevant information from other sources. During a review of FAA Order 7110.65, we discovered that the listed ATIS contents were not presented in a very readable format. Therefore, we decided to standardize the presentation of the three main books that controllers and pilots use, namely the AIM, AIP, and 7110.65.

3. CHANGE:

OLD	**NEW**
2–9–3. CONTENT	**2–9–3. CONTENT**
Include the following in ATIS broadcast as appropriate:	**a.** Include the following in ATIS broadcast as appropriate:
a. Airport/facility name, phonetic letter code, time of weather sequence (UTC). Weather information consisting of wind direction and velocity, visibility, obstructions to vision, present weather, sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate and other pertinent remarks included in the official weather observation. Wind direction, velocity, and altimeter must be reported from certified direct reading instruments. Temperature and dew point should be reported from certified direct reading sensors when available. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.	**1.** Airport/facility name.
Add	**2. Phonetic letter code.**
Add	**3. Time of the latest weather sequence (UTC).**
Add	**4. Weather information consisting of:**
Add	**(a) Wind direction and velocity.**
Add	**(b) Visibility.**
Add	**(c) Obstructions to vision.**
Add	**(d) Present weather consisting of: sky condition, temperature, dew point, altimeter, a density altitude advisory when appropriate, and other pertinent remarks included in the official weather observation.**
Add	**5. Instrument approach and runway in use.**

Add	**Temperature and dew point should be reported from certified direct reading sensors when available. Always include weather observation remarks of lightning, cumulonimbus, and towering cumulus clouds.**
NOTE– *ASOS/AWOS is to be considered the primary source of wind direction, velocity, and altimeter data for weather observation purposes at those locations that are so equipped. The ASOS Operator Interface Device (OID) displays the magnetic wind as "MAG WND" in the auxiliary data location in the lower left–hand portion of the screen. Other OID displayed winds are true and are not to be used for operational purposes.*	No Change

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1. PARAGRAPH NUMBER AND TITLE: 3–1–5. VEHICLES/EQUIPMENT/PERSONNEL ON RUNWAYS

2. BACKGROUND: Specific instructions must ensure positive control to ground vehicles as is provided to aircraft. The paragraph title for paragraph 3–1–5 "Vehicles/Equipment/Personnel on Runways," does not adequately reflect the information contained in the paragraph, with regard to vehicles that do not actually enter or cross runways. This DCP is related to a change 3–7–1b currently in process.

3. CHANGE:

OLD	NEW
3–1–5. VEHICLES/EQUIPMENT/ PERSONNEL ON RUNWAYS	**3–1–5. VEHICLES/EQUIPMENT/ PERSONNEL NEAR/ON RUNWAYS**
a. Ensure that the runway to be used is free of all known ground vehicles, equipment, and personnel before a departing aircraft starts takeoff or a landing aircraft crosses the runway threshold.	**a. Vehicles, equipment, and personnel in direct communications with the control tower may be authorized to operate up to the edge of an active runway surface when necessary. Provide advisories as specified in Paragraph 3–1–6, Traffic Information, and Paragraph 3–7–5, Precision Approach Critical Area, as appropriate.**
Add	***PHRASEOLOGY–*** ***PROCEED AS REQUESTED; (and if necessary, additional instructions or information).***
b. Vehicles, equipment, and personnel in direct communications with the control tower may be authorized to operate up to the edge of an active runway surface when necessary. Provide advisories as specified in para 3–1–6, Traffic Information, and para 3–7–5, Precision Approach Critical Area, as appropriate.	**b. Ensure that the runway to be used is free of all known ground vehicles, equipment, and personnel before a departing aircraft starts takeoff or a landing aircraft crosses the runway threshold.**

PHRASEOLOGY– *PROCEED AS REQUESTED; (and if necessary, additional instructions or information).*	Delete
Add	***NOTE–*** ***"PROCEED AS REQUESTED" is not approved phraseology for instructing aircraft, vehicles, equipment, or personnel to cross or operate on a runway.***

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1. PARAGRAPH NUMBER AND TITLE:
3–1–6. TRAFFIC INFORMATION
3–8–1. SEQUENCING/SPACING INFORMATION
3–10–3. SAME RUNWAY SEPARATION

2. BACKGROUND: Air Traffic Controllers often use the term "parallel runway" instead of using the actual runway number to describe traffic utilizing the other runway. The only existing example of describing traffic on a parallel runway is related to opposite direction operations in paragraph 3–8–4.

3. CHANGE:

OLD	**NEW**
3–1–6. TRAFFIC INFORMATION	**3–1–6. TRAFFIC INFORMATION**
Title through **a**	No Change
b. Describe the relative position of traffic in an easy to understand manner, such as "to your right" or "ahead of you."	No Change
EXAMPLE– *"Traffic, U.S. Air MD–Eighty on downwind leg to your left."* *"King Air inbound from outer marker on straight–in approach to runway one seven."*	***EXAMPLE–*** ***1.*** *"Traffic, U.S. Air MD–Eighty on downwind leg to your left."* ***2.*** *"King Air inbound from outer marker on straight–in approach to runway one seven."* ***3. "Traffic, Boeing 737 on 2–mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."***

OLD	**NEW**
3–8–1. SEQUENCING/SPACING INFORMATION	**3–8–1. SEQUENCING/SPACING INFORMATION**
Establish the sequence of arriving and departing aircraft by requiring them to adjust flight or ground operation, as necessary, to achieve proper spacing.	No Change

PHRASEOLOGY–
CLEARED FOR TAKEOFF.

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

EXTEND DOWNWIND.

MAKE SHORT APPROACH.

NUMBER (landing sequence number),

FOLLOW (description and location of traffic),

or if traffic is utilizing another runway,

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

Add

CIRCLE THE AIRPORT.

MAKE LEFT/RIGHT THREE–SIXTY/TWO SEVENTY.

GO AROUND (additional instructions as necessary).

CLEARED TO LAND.

CLEARED:

TOUCH–AND–GO,
or

STOP–AND–GO,
or

LOW APPROACH.

CLEARED FOR THE OPTION,

or

OPTION APPROVED,

or

UNABLE OPTION, (alternate instructions).

or

UNABLE (type of option), OTHER OPTIONS APPROVED.

PHRASEOLOGY–
CLEARED FOR TAKEOFF.

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

EXTEND DOWNWIND.

MAKE SHORT APPROACH.

NUMBER (landing sequence number),

FOLLOW (description and location of traffic),

or if traffic is utilizing another runway,

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

TRAFFIC (description and location) LANDING THE PARALLEL RUNWAY

CIRCLE THE AIRPORT.

MAKE LEFT/RIGHT THREE–SIXTY/TWO SEVENTY.

GO AROUND (additional instructions as necessary).

CLEARED TO LAND.

CLEARED:

TOUCH–AND–GO,

or

STOP–AND–GO,

or

LOW APPROACH.

CLEARED FOR THE OPTION,

or

OPTION APPROVED,
or

UNABLE OPTION, (alternate instructions).
or

UNABLE (type of option), OTHER OPTIONS APPROVED.

OLD	NEW
3–10–3. SAME RUNWAY SEPARATION	**3–10–3. SAME RUNWAY SEPARATION**
Title through **b2** ***REFERENCE***	No Change
EXAMPLE–	***EXAMPLE–***
1. ***"****Runway two seven left cleared to land, caution wake turbulence, heavy Boeing 747 departing runway two seven right."*	***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 two-mile final. Caution wake turbulence."*	***2.*** *"Number two follow Boeing 757 on* ***2****-mile final. Caution wake turbulence."*
	3. "Traffic, Boeing 737 on 2–mile final to the parallel runway, runway two six right, cleared to land. Caution wake turbulence."

---

1. PARAGRAPH NUMBER AND TITLE: 3–7–1. GROUND TRAFFIC MOVEMENT

2. BACKGROUND: The phraseology example given in paragraph 3–7–1b "proceed as requested," does not provide specific instructions for runway/taxiway access. "PROCEED AS REQUESTED" is currently permitted for use in instructing vehicles, equipment, or personnel to cross or operate on a runway: however it is not permitted for aircraft movement. This change incorporates the same requirements for vehicles, equipment, or personnel movement crossing or operating on a runway that currently exist for aircraft.

3. CHANGE:

OLD	NEW
3–7–1. GROUND TRAFFIC MOVEMENT	**3–7–1. GROUND TRAFFIC MOVEMENT**
Title through **b** ***REFERENCE***	No Change
EXAMPLE–	***EXAMPLE–***
"Airport 1, proceed on Runway 26R, hold short of Runway18L."	*"Airport 1, proceed on Runway 26R, hold short of Runway18L."*
"(Tower), Airport 1 at taxiway B8, request to inspect Runway 26R." "Airport 1 proceed as requested, hold short of Runway 18L."	*"Airport 1 proceed* ***on taxi way B****, hold short of Runway 18L."*
"Airport 1 proceed on taxi way B, hold short of Runway18L."	*"Airport 1 proceed on* ***Runway 26R." (additional instructions as necessary.)***
NOTE–	***NOTE–***
The following are examples of unconditional instructions and are not approved for use: "THE FIELD IS YOURS,""CLEARED ON ALL SURFACES," "THE AIRPORT IS YOURS," and "PROCEED ON ALL RUNWAYS AND TAXIWAYS."	***1.*** *The following are examples of unconditional instructions and are not approved for use: "THE FIELD IS YOURS," "CLEARED ON ALL SURFACES," "THE AIRPORT IS YOURS," and "PROCEED ON ALL RUNWAYS AND TAXIWAYS."*
	2. "PROCEED AS REQUESTED" is not approved phraseology for instructing aircraft, vehicles, equipment, or personnel to cross or operate on a runway.

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1. PARAGRAPH NUMBER AND TITLE: 3−7−2. TAXI AND GROUND MOVEMENT OPERATIONS

2. BACKGROUND: This DCP incorporates three distinct changes: (a) There have been several documented events where there was an Airport Surface Detection Equipment alert caused by a controller issuing runway crossing instructions to an aircraft/vehicle prior to the departing aircraft passing the intersection of intended crossing. During the investigation into these events, it was discovered that there is a lack of consistency in the determination of when it is acceptable to issue a runway crossing clearance (to an aircraft/vehicle) during arrivals and departures. FAA Order JO 7110.65 is unclear on the subject. A workgroup was formed to address the crossing of aircraft/vehicles downfield of departing and arriving aircraft; (b) The Runway Safety Council (RSC) is comprised of various FAA Lines of Business and external stakeholders. The RSC meets on a regular basis to identify and enhance the safety of surface operations, The Root Cause Analysis Team (RCAT) reviews serious events and identifies latent hazards. The analysis of one event led to the Council to request this document change. Amending FAA Order JO 7110.65, paragraph 3−7−2, to require a controller to identify the point at which an aircraft or vehicle is to cross a runway will reduce the chance of an aircraft or vehicle mistakenly accepting a crossing clearance issued to a different aircraft or vehicle; (c) The Risk Mitigation Monitoring Evaluation team (RMME) conducted an evaluation of the runway−to−runway crossing clearance procedure. Inconsistencies in the interpretation and application of this procedure, as well as the multiple runway crossing procedure, resulted in several changes to both procedures.

3. CHANGE:

OLD	NEW
3−7−2. TAXI AND GROUND MOVEMENT OPERATIONS	**3−7−2. TAXI AND GROUND MOVEMENT OPERATIONS**
Title through ***NOTE 2***	No Change
a. When authorizing an aircraft/vehicle to proceed on the movement area or to any point other than assigned takeoff runway, specify the route/taxi instructions. If it is the intent to hold the aircraft/vehicle short of any given point along the taxi route, issue the route and then state the holding instructions.	**a.** When authorizing a vehicle to proceed on the movement area or **an aircraft to taxi** to any point other than assigned takeoff runway, specify the route/taxi instructions**, including specific instructions on where to cross a runway**. If it is the intent to hold the aircraft/vehicle short of any given point along the taxi route, issue the route and then state the holding instructions.
NOTE 1 and 2	No Change

PHRASEOLOGY–	***PHRASEOLOGY–***
HOLD POSITION.	*HOLD POSITION.*
HOLD FOR (reason)	*HOLD FOR (reason)*
CROSS (runway/taxiway)	*CROSS (runway/taxiway)**, at (runway/taxiway)***
or	*or*
TAXI/CONTINUE TAXIING/PROCEED/VIA (route),	*TAXI/CONTINUE TAXIING/PROCEED/VIA (route),*
or	*or*
ON (runway number or taxiways, etc.),	*ON (runway number or taxiways, etc.),*
or	*or*
TO (location),	*TO (location),*
or	*or*
(direction),	*(direction),*
or	*or*
ACROSS RUNWAY (number).	*ACROSS RUNWAY (number)**, at (runway/taxiway)**.*
or	*or*
VIA (route), HOLD SHORT OF (location)	*VIA (route), HOLD SHORT OF (location)*
or	*or*
FOLLOW (traffic) (restrictions as necessary)	*FOLLOW (traffic) (restrictions as necessary)*
or	*or*
BEHIND (traffic).	*BEHIND (traffic).*
EXAMPLE–	***EXAMPLE–***
“Cross Runway Two −Eight Left, hold short of Runway Two −Eight Right.”	*Cross Runway Two −Eight Left, **at taxiway Alpha,** hold short of Runway Two −Eight Right.”*
“Taxi/continue taxiing/proceed to the hangar.”	*“Taxi/continue taxiing/proceed to the hangar.”*
“Taxi/continue taxiing/proceed straight ahead then via ramp to the hangar.”	*“Taxi/continue taxiing/proceed straight ahead then via ramp to the hangar.”*
“Taxi/continue taxiing/proceed on Taxiway Charlie, hold short of Runway Two −Seven.”	*“Taxi/continue taxiing/proceed on Taxiway Charlie, hold short of Runway Two −Seven.”*
or	*or*
“Taxi/continue taxing/proceed on Charlie, hold short of Runway Two −Seven.”	*“Taxi/continue taxing/proceed on Charlie, hold short of Runway Two −Seven.”*
b through ***EXAMPLE***	No Change

c. Aircraft/vehicles must receive a clearance for each runway their route crosses. An aircraft/vehicle must have crossed a previous runway before another runway crossing clearance may be issued.	**c.** Aircraft must receive a clearance for each runway their route crosses. An aircraft must have crossed a previous runway before another runway crossing clearance may be issued. **At those airports where the taxi distance between runway centerlines is 1,300 feet or less, multiple runway crossings may be issued with a single clearance. The air traffic manager must submit a request to the appropriate Service Area Director of Operations for approval before authorizing multiple runway crossings.**
NOTE– *A clearance is required for aircraft/vehicles to operate on any active, inactive, or closed runway except for vehicles operating on closed runways in accordance with a Letter of Agreement (LOA).*	***NOTE–*** ***Controllers should avoid crossing points that are not perpendicular or nearly perpendicular to the runway to be crossed, (for example, reverse high speed taxiways).***
Add	***PHRASEOLOGY–*** ***"Cross (runway) at(runway/taxiway), hold short of (runway)", or*** ***Cross (runways) at (runway/taxiway).***
EXAMPLE– *"Cross Runway One–Six Left, hold short of Runway One–Six Right.*	***EXAMPLE–*** *"Cross Runway One–Six Left* ***at Taxiway Bravo,*** *hold short of Runway One–Six Right."* ***"Cross Runway One–Six Left and Runway One–Six Right at Taxiway Bravo."***
Add	***REFERENCE–*** ***FAAO JO 7210.3, Para 10–3–10 Multiple Runway Crossings.***
d. When an aircraft/vehicle is instructed to "follow" traffic and requires a runway crossing, issue a runway crossing clearance in addition to the follow instructions and/or hold short instructions, as applicable.	No Change
EXAMPLE– *"Follow (traffic), cross Runway Two–Seven Right."* *or* *"Follow (traffic), cross Runway Two Seven–Right, hold short Runway Two–Seven Left."*	***EXAMPLE–*** *"Follow (traffic), cross Runway Two–Seven Right,* ***at Taxiway Whiskey"*** ***or*** *"Follow (traffic), cross Runway Two Seven–Right* ***at Taxiway Whiskey,*** *hold short of Runway Two–Seven Left."*
e. At those airports where the taxi distance between runway centerlines is less than 1,000 feet, multiple runway crossings may be issued with a single clearance. The air traffic manager must submit a request to the appropriate Terminal Services Director of Operations for approval before authorizing multiple runway crossings.	**e. Vehicles must receive a clearance for each runway their route crosses. A vehicle must have crossed a previous runway before another runway crossing clearance may be issued.**
REFERENCE– *FAAO JO 7210.3, Para 10–3–10 Multiple Runway Crossings.*	Delete

Add	***NOTE–*** ***A clearance is required for vehicles to operate on any active, inactive, or closed runway except for vehicles operating on closed runways in accordance with a Letter of Agreement (LOA).***
Add	**f. Crossing of active runway(s) by aircraft/vehicle(s):**
Add	**1. During departure operations, ensure that aircraft/vehicles intending to cross a runway do not cross the runway holding position markings until the controller visually observes the departure aircraft in a turn, or the departure aircraft has passed the point where the crossing aircraft/vehicle is located, regardless of altitude, unless authorized in FAA Order JO 7110.65, Para. 3–10–10, Altitude Restricted Low Approach.**
Add	***REFERENCE–*** ***AIM, Runway Position Holding Markings, Para 2–3–5a*** ***FAAO 7110.65, 3–10–10, Altitude Restricted Low Approach***
Add	**2. During arrival operations, ensure the following:**
Add	**(a) An aircraft/vehicle has completed crossing prior to the arriving aircraft crossing the landing threshold, or**
Add	***REFERENCE–*** ***P/CG Term – Clear of Runway***
Add	**(b) A crossing aircraft/vehicle will not cross the runway holding position markings until the arrival has landed and either:**
Add	**(1) The controller has confirmed by verbal commitment from the pilot that the arriving aircraft will exit the runway prior to the point at which the crossing is intended, or**
Add	**(2) The controller visually observes the aircraft exiting the runway prior to the point at which the crossing is intended, or**
Add	**(3) The arriving aircraft has passed the point at which the crossing is intended.**
f. Request a read back of runway hold short instructions when it is not received from the pilot/vehicle operator.	**g.** Request a read back of runway hold short instructions when it is not received from the pilot/vehicle operator.
g. Issue progressive taxi/ground movement instructions when:	**h.** Issue progressive taxi/ground movement instructions when:
h. Issue instructions to expedite a taxiing aircraft or a moving vehicle.	**i.** Issue instructions to expedite a taxiing aircraft or a moving vehicle.

PHRASEOLOGY–
TAXI WITHOUT DELAY (traffic if necessary).

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

i. Issue instructions to aircraft/vehicle to hold short of an approach hold area.

PHRASEOLOGY–
TAXI WITHOUT DELAY (traffic if necessary).

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

j. Issue instructions to aircraft/vehicle to hold short of an approach hold area.

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1. PARAGRAPH NUMBER AND TITLE:
3−7−5. PRECISION APPROACH CRITICAL AREA
3−7−6. PRECISION OBSTACLE FREE ZONE (POFZ) AND FINAL APPROACH OBSTACLE CLEARANCE SURFACES (OCS)
4−6−8. ILS PROTECTION/CRITICAL AREAS

2. BACKGROUND: Numerous ATSAP reports indicate a lack of understanding, direction, and inconsistent application of the procedures contained in FAA Order JO 7110.65, 3−7−5. Precision Approach Critical Area. Examination of ATSAP and ASAP reports, and research of the issue indicate that controllers should take additional action after PIREPs of lower ceilings and/or visibility values are received via PIREPs when the Official Weather Observations report a ceiling of 800 feet or higher and/or visibility of 2 miles or more. The ATSAP ERC recommended revising paragraph FAA Order JO 7110.65, Paragraph 3−7−5, to require the precision approach critical areas be protected for the lowest reported value, whether the report is via METAR, PIREP, ASOS, tower controller observation or any other reliable source. Additional research found that the same lack of understanding, direction, and inconsistent application of procedures relating to Paragraph 3−7−5 could happen with several related paragraphs.

3. CHANGE:

OLD

3−7−5. PRECISION APPROACH CRITICAL AREA

a. ILS critical area dimensions are described in FAA Order 6750.16, Siting Criteria for Instrument Landing Systems. Aircraft and vehicle access to the ILS critical area must be controlled to ensure the integrity of ILS course signals whenever conditions are less than reported ceiling 800 feet or visibility less than 2 miles. Do not authorize vehicles/aircraft to operate in or over the critical area, except as specified in subparagraph a1, whenever an arriving aircraft is inside the ILS outer marker (OM) or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway.

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

Add

NEW

3−7−5. PRECISION APPROACH CRITICAL AREA

a. ILS critical area dimensions are described in FAA Order 6750.16, Siting Criteria for Instrument Landing Systems. Aircraft and vehicle access to the ILS critical area must be controlled to ensure the integrity of ILS course signals whenever **the official weather observation is a ceiling of less than** 800 feet or visibility less than 2 miles. Do not authorize vehicles/aircraft to operate in or over the critical area, except as specified in subparagraph a1, whenever an arriving aircraft is inside the ILS outer marker (OM) or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway.

No Change

NOTE–
All available weather sources METARs/SPECI/PIREPS/Controller observations are reported ceilings and/or visibilities and must be disseminated as described in 7110.65 and 7210.3

Add	***REFERENCE–*** ***FAAO JO 7110.65, Para 2–6–3, PIREP Information*** ***FAAO JO 7210.3, Para 2–9–2, Receipt and Dissemination of Weather Observations*** ***FAAO JO 7210.3, Para 10–3–1, SIGMENT and PIREP Handling*** ***FAAO JO 7900.5, Para 6.4d, Equipment for Sky Condition***
1. LOCALIZER CRITICAL AREA	No Change
(a) Do not authorize vehicle or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM when conditions are less than reported ceiling 800 feet or visibility less than 2 miles, except:	**(a)** Do not authorize vehicle or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM when **the official weather observation is a ceiling of less than** 800 feet or visibility less than 2 miles, except:
(a)(1) and **(a)(2)**	No Change
(b) In addition to subparagraph a1(a), when conditions are less than reported ceiling 200 feet or RVR 2,000 feet, do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the middle marker, 1/2 final mile.	**(b)** In addition to subparagraph a1(a), when **the official weather observation indicates a ceiling of less than** 200 feet or RVR 2,000 feet, do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the middle marker, 1/2 final mile.
2. GLIDESLOPE CRITICAL AREA. Do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway when conditions are less than reported ceiling 800 feet or visibility less than 2 miles.	**2.** GLIDESLOPE CRITICAL AREA. Do not authorize vehicles or aircraft operations in or over the area when an arriving aircraft is inside the ILS OM or the fix used in lieu of the OM unless the arriving aircraft has reported the runway in sight or is circling to land on another runway when **the official weather observation indicates a ceiling of less than** 800 feet or visibility less than 2 miles.
b. Operators commonly conduct "coupled" or "autoland" approaches to satisfy maintenance, training, or reliability program requirements. Promptly issue an advisory if the critical area will not be protected when an arriving aircraft advises that a "coupled," "CATIII," "autoland," or similar type approach will be conducted and the weather indicates a reported ceiling of 800 feet or more, or the visibility is 2 miles or more.	**b.** Operators commonly conduct "coupled" or "autoland" approaches to satisfy maintenance, training, or reliability program requirements. Promptly issue an advisory if the critical area will not be protected when an arriving aircraft advises that a "coupled," "CATIII," "autoland," or similar type approach will be conducted and the **official weather observation indicates a** ceiling of 800 feet or more, or the visibility is 2 miles or more.
OLD	**NEW**
3–7–6. PRECISION OBSTACLE FREE ZONE (POFZ) AND FINAL APPROACH OBSTACLE CLEARANCE SURFACES (OCS)	**3–7–6. PRECISION OBSTACLE FREE ZONE (POFZ) AND FINAL APPROACH OBSTACLE CLEARANCE SURFACES (OCS)**
a. Ensure the POFZ is clear of traffic (aircraft or vehicles) when an aircraft on a vertically–guided final approach is within 2 miles of the runway threshold and the reported ceiling is below 300 feet or visibility is less than 3/4 SM to protect aircraft executing a missed approach.	**a.** Ensure the POFZ is clear of traffic (aircraft or vehicles) when an aircraft on a vertically–guided final approach is within 2 miles of the runway threshold and the **official weather observation indicates the** ceiling is below 300 feet or visibility is less than 3/4 SM to protect aircraft executing a missed approach**.**

NOTE– *Only horizontal surfaces (e.g., the wings) can penetrate the POFZ, but not the vertical surfaces (e.g., fuselage or tail). Three hundred feet (300) is used because ATC does not measure ceilings in fifty (50) foot increments.*	No Change
b. Ensure the final approach OCS (e.g., ILS /LPV W, X, and Y surfaces) are clear of aircraft/vehicles when an aircraft on the vertically−guided approach is within 2 miles of the runway threshold and the reported ceiling is below 800 feet or visibility is less than 2 SM to protect aircraft executing a missed approach.	**b.** Ensure the final approach OCS (e.g., ILS /LPV W, X, and Y surfaces) are clear of aircraft/vehicles when an aircraft on the vertically−guided approach is within 2 miles of the runway threshold and the **official weather observation indicates the** ceiling is below 800 feet or visibility is less than 2 SM to protect aircraft executing a missed approach.
OLD	**NEW**
4−6−8. ILS PROTECTION/CRITICAL AREAS When conditions are less than reported ceiling 800 feet or visibility of 2 miles, do not authorize aircraft to hold below 5,000 feet AGL inbound toward the airport on or within 1 statute mile of the localizer between the ILS OM or the fix used in lieu of the OM and the airport. *USAF.* The holding restriction applies only when an arriving aircraft is between the ILS OM or the fix used in lieu of the OM and the runway.	**4−6−8. ILS PROTECTION/CRITICAL AREAS** When **the official weather observation indicates a ceiling of less than** ceiling 800 feet or visibility of 2 miles, do not authorize aircraft to hold below 5,000 feet AGL inbound toward the airport on or within 1 statute mile of the localizer between the ILS OM or the fix used in lieu of the OM and the airport. *USAF.* The holding restriction applies only when an arriving aircraft is between the ILS OM or the fix used in lieu of the OM and the runway.

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1. PARAGRAPH NUMBER AND TITLE: 3−8−3. SIMULTANEOUS SAME DIRECTION OPERATIONS

2. BACKGROUND: Operations described in FAA Order JO 7110.65, paragraph 3−8−3, and Table 3−8−1 pertain to SSDO on parallel runways by two or more aircraft. As such, the runway centerline distances in Table 3−8−1 are the sum of each parallel runway's respective lateral Runway Safety Area (RSA) dimensions. RSAs enhance safety for aircraft that undershoot, overrun, or veer off the runway. Many inquiries regarding the requirements, terminology, and proper application of the procedures contained in FAA Order JO 7110.65, Paragraph 3−8−3, SSDO, have led to numerous, and often conflicting interpretations without connectivity to any source document/reference. There have been four waivers issued to facilities conducting SSDO. This change allows for the reduction in the number of or elimination of these waivers. Current terminology used to describe aircraft categories in Table 3−8−1 is inconsistent with terms used to describe aircraft in both AC 150/5300−13 and FAA JO Order 7110.65. For example, the current term "twin engine propeller driven" used in Table 3−8−1 lacks any specified weight, thereby unnecessarily grouping some small Category II aircraft with some large Category III aircraft. Likewise, the terminology "All others" includes anything not captured by the terms "single engine propeller driven" and "twin engine propeller driven" categories which mistakenly groups small helicopter and even small jets with heavy aircraft. Both of these examples demonstrates a lack of connectivity with the stated purposes of the prescribed distance minima. AFS has adopted the lateral RSA distances contained in AC 150/5300−13, Airport Design, as the approved standard for conducting SSDO. Criteria used in AC 150/5300−13 to determine the RSA dimensions is a combination of aircraft approach category and the Airplane Design Group (ADG). There is no way to directly correlate the standards in the AC with the terminology used to describe aircraft categories in FAA JO 7110.65 which are based largely on weight. However, by cross referencing ADG data and aircraft maximum certified takeoff weights in the AC with the aircraft same runway separation (SRS) category definitions in FAA JO Order 7110.65 (Category I, II and III), it is possible to capture all applicable RSA

dimensions in the AC for the aircraft categories used by ATC and update the terminology used in Table 3−8−1 accordingly.

3. CHANGE:

OLD

3−8−3. SIMULTANEOUS SAME DIRECTION OPERATIONS

Title through **b**

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

NEW

3−8−3. SIMULTANEOUS SAME DIRECTION OPERATIONS

No Change

c. The distance between the **parallel** runways or landing strips is in accordance with **those specified** in TBL 3−8−1.

OLD

TBL 13−3−1

Same Direction Distance Minima

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

NEW

TBL 13−3−2

Same Direction Distance Minima

Aircraft category	Minimum distance (feet) between parallel	
	Runway centerlines	Edges of adjacent strips or runway and strip
Category I or Category II	300	200
If either aircraft is a Category III	500	400
If either aircraft is a Heavy	700	600

Add

NOTE−

1. Aircraft Categories specified in Table 3−8−1 are Same Runway Separation (SRS) categories as indicated in Paragraph 3−9−6, Same Runway Separation.

2. When conducting Simultaneous Same Direction Operations (SSDO), applicable Wake Turbulence provisions apply.

1. PARAGRAPH NUMBER AND TITLE: 3−9−4. LINE UP AND WAIT (LUAW)

2. BACKGROUND: Airport traffic control towers responsible for sequencing arriving aircraft employ various techniques to establish a landing sequence. Occasionally, control instructions necessary to sequence aircraft are not compatible with the phraseology "CONTINUE" specified in the example in FAA Order JO 7110.65 paragraph 3−10−5. Examples of incompatible phraseology with the word "CONTINUE" nclude: "TURN BASE NOW, TURN BASE IN ONE MILE, BASE APPROVED, MAKE LEFT THREE−SIXTY", etc. When an inbound aircraft is issued a restriction such as "TOWER WILL CALL BASE" and a controller subsequently issues the instruction "CONTINUE, TRAFFIC HOLDING IN POSITION", pilots have reported uncertainty on the meaning of "CONTINUE" in this situation. Some pilots believe it means continue flying the current leg of the traffic pattern, some think it means fly a normal pattern. Similarly, some controllers report being unsure whether instructing an aircraft to "CONTINUE" deletes a previously issued control instruction.

3. CHANGE:

OLD	**NEW**
3−9−4. LINE UP AND WAIT (LUAW)	**3−9−4. LINE UP AND WAIT (LUAW)**
Title through **c1**	No Change
(a) Do not issue a landing clearance to an aircraft requesting a full−stop, touch−and−go, stop−and−go, option, or unrestricted low approach on the same runway with an aircraft that is holding in position or taxiing to line up and wait until the aircraft in position starts takeoff roll.	No Change
Add	***PHRASEOLOGY−*** ***RUNWAY (number), CONTINUE, TRAFFIC HOLDING IN POSITION,*** ***or*** ***RUNWAY (number) (pattern instructions as appropriate) TRAFFIC HOLDING IN POSITION.***
Add	***EXAMPLE−*** ***"American 528, Runway Two−Three continue, traffic holding in position."*** ***"Twin Cessna Four Four Golf, Runway One−Niner Right, base approved, traffic holding in position."*** ***"Baron Two Five Foxtrot, Runway One−Niner, extend downwind, tower will call your base, traffic holding in position."***
(b) Do not authorize an aircraft to LUAW if an aircraft has been cleared to land, touch−and−go, stop−and−go, option, or unrestricted low approach on the same runway.	No Change
PHRASEOLOGY− *RUNWAY (number), CONTINUE, TRAFFIC HOLDING IN POSITION.*	Delete
EXAMPLE− *"American 528, Runway Two−Three continue, traffic holding in position."*	Delete

c2(a) and **c2(b)**	No Change
d. When an aircraft is authorized to line up and wait, inform it of the closest traffic requesting a full–stop, touch–and–go, stop–and–go, option, or unrestricted low approach to the same runway.	**d.** When an aircraft is authorized to line up and wait, inform it of the closest traffic **within 6–flying miles** requesting a full–stop, touch–and–go, stop–and– go, option, or unrestricted low approach to the same runway.
e and **f**	No Change
g. An aircraft may be authorized to line up and wait at an intersection between sunset and sunrise under the following conditions:	No Change
1. The procedure must be approved by the appropriate Director, Terminal Operations (service area) as well as the Director, Terminal Safety and Operations Support.	**1.** The procedure must be approved by the appropriate **Service Area Director of Air Traffic Operations.**

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1. PARAGRAPH NUMBER AND TITLE:
3–9–6. SAME RUNWAY SEPARATION
3–9–7. WAKE TURBULENCE SEPARATION INTERSECTION DEPARTURES
5–5–4. MINIMA

2. BACKGROUND: FAA Order JO 7110.65W contained changes to the wake turbulence separation minima behind B757 aircraft. These changes eliminated separation requirements for heavy and large aircraft behind a B757 and reduced the separation for small aircraft to four miles and less than 500 feet below when operating directly behind a B757. Also, the runway separation requirement for a small behind a B757 was changed from the same or parallel runway separated by less than 2,500 feet to the same runway. When developing the new procedures, processes were included in Paragraph 5–5–4, Minima, for radar operations; however, time based requirements were not included to account for the airborne wake turbulence separation when a small aircraft crosses behind a B757 that has departed a parallel runway separated by less than 2,500 feet. Paragraph 5–5–4, Minima, Subparagraph g.3., contains a note stating that the application of Paragraph 5–8–3, Successive or Simultaneous Departures, satisfies the requirements of the subparagraph when an initial heading is issued with the takeoff clearance. The requirement to issue an initial heading has been removed as the proper application of Paragraph 5–8–3 will provide for the initial course divergence.

3. CHANGE:

OLD	**NEW**
3–9–6. SAME RUNWAY SEPARATION	**3–9–6. SAME RUNWAY SEPARATION**
Title through **f**	No Change
g. Separate a small aircraft behind a B757 by *2 minutes* when departing the same runway.	**g.** Separate a small behind a B757 aircraft by *2 minutes* when departing**:**
Add	**1. The same runway.**
Add	**2. A parallel runway separated by less than 2,500 feet if flight paths will cross.**

OLD

3–9–7. WAKE TURBULENCE SEPARATION INTERSECTION DEPARTURES

Title through **a2**

3. Separate a small aircraft taking off from an intersection on the same runway (same or opposite direction) behind a departing B757 by ensuring that the aircraft does not start takeoff roll until at least *3 minutes* after the preceding aircraft has taken off.

Add

Add

NEW

3–9–7. WAKE TURBULENCE SEPARATION INTERSECTION DEPARTURES

No Change

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:**

(a) The same runway.

(b) Parallel runways separated by less than 2,500 feet, or parallel runways separated by less than 2,500 feet with the runway thresholds offset by 500 feet or more, if flight paths will cross.

OLD

5–5–4. MINIMA

Title through **g3**

NOTE–
The application of paragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement when an initial heading is issued with the takeoff clearance.

NEW

5–5–4. MINIMA

No Change

NOTE–
*The application of **P**aragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement.*

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1. PARAGRAPH NUMBER AND TITLE: 4–3–2. DEPARTURE CLEARANCES

2. BACKGROUND: A recent inquiry from a field facility brought to light content that needs to be clarified. The intent of paragraph 4–3–2 c1(a) is to allow maximum flexibility to the controller at a towered airport when assigning departure instructions. However, the protections afforded the pilot by published departure procedures (DP) or diverse vector areas (DVA) are not accounted for and become lost in this language, and leaves the agency vulnerable if assigned instructions place an aircraft in proximity to obstacles that the published DPs and DVAs were intending to protect. Additionally use of the word ”azimuth” is obsolete as applied to departures, and is not defined.

3. CHANGE:

OLD

4–3–2. DEPARTURE CLEARANCES

Title through **c**

1. Specify direction of takeoff/turn or initial heading/azimuth to be flown after takeoff as follows:

(a) Locations with Airport Traffic Control Service– Specify these items as necessary.

NEW

4–3–2. DEPARTURE CLEARANCES

No Change

1. Specify direction of takeoff/turn or initial heading to be flown after takeoff as follows:

(a) Locations with Airport Traffic Control Service–Specify **direction of takeoff/turn or initial heading** as necessary**, consistent with published departure procedures (DP) or diverse vector areas (DVA), where applicable**.

Add	***NOTE–*** ***If an initial heading is assigned in lieu of an assigned/filed Pilot Nav SID, and an ODP is published for that runway, pilots may commence turn after reaching a safe altitude or they may complete the ODP instructions for obstacle clearance, based on the regulations they are operating under before turning to the assigned heading.***
(b) Locations without Airport Traffic Control Service, but within a Class E surface area – specify these items if necessary. Obtain/solicit the pilot's concurrence concerning these items before issuing them in a clearance.	**(b)** Locations without Airport Traffic Control Service, but within a Class E surface area – specify **direction of takeoff/turn or initial heading** if necessary. Obtain/solicit the pilot's concurrence concerning **a turn or heading** before issuing them in a clearance.
NOTE– *Direction of takeoff and turn after takeoff can be obtained/solicited directly from the pilot, or relayed by an FSS, dispatcher, etc., as obtained/solicited from the pilot.*	No Change
(c) At all other airports– Do not specify direction of takeoff/turn after takeoff. If necessary to specify an initial heading/azimuth to be flown after takeoff, issue the initial heading/azimuth so as to apply only within controlled airspace.	**(c)** At all other airports– Do not specify direction of takeoff/turn after takeoff. If necessary to specify an initial heading to be flown after takeoff, issue the initial heading so as to apply only within controlled airspace.

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1. PARAGRAPH NUMBER AND TITLE: 4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES

2. BACKGROUND: Current procedures require the issuance of a time check, under most conditions, when issuing restrictions based on the UTC clock. The current phraseology for issuing a release in conjunction with a void time is lengthy. Controllers are taught to provide information in a concise format, yet a single clearance with a void time could include up to 17 digits.

3. CHANGE:

OLD	**NEW**
4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES	**4–3–4. DEPARTURE RESTRICTIONS, CLEARANCE VOID TIMES, HOLD FOR RELEASE, AND RELEASE TIMES**
Title through **a1**	No Change
2. The facility delivering a clearance void time to a pilot must issue a time check.	**2.** The facility delivering a clearance void time to a pilot must issue a time check. **A void time issued using a specified number of minutes does not require a time check.**

PHRASEOLOGY–
CLEARANCE VOID IF NOT OFF BY (clearance void time),

and if required,

IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and the nearest quarter minute).

Add

PHRASEOLOGY–
CLEARANCE VOID IF NOT OFF BY (clearance void time),

and if required,

IF NOT OFF BY (clearance void time), ADVISE (facility) NOT LATER THAN (time) OF INTENTIONS.

TIME (time in hours, minutes, and the nearest quarter minute).

or

CLEARANCE VOID IF NOT OFF IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

b through **c1**

No Change

2. The facility issuing a release time to a pilot must include a time check.

2. The facility issuing a release time to a pilot must **issue** a time check. **A release time using a specified number of minutes does not require a time check.**

PHRASEOLOGY–
(Aircraft identification) RELEASED FOR DEPARTUREAT (time in hours and/or minutes),

and if required,

IF NOT OFF BY (time), ADVISE (facility) NOT LATER

THAN (time) OF INTENTIONS.
TIME (time in hours, minutes, and nearest quarter minute).

PHRASEOLOGY–
(Aircraft identification) RELEASED FOR DEPARTURE AT (time in hours and/or minutes),

and if required,

IF NOT OFF BY (time), ADVISE (facility) NOT LATER

THAN (time) OF INTENTIONS.
TIME (time in hours, minutes, and nearest quarter minute).

Add

(Aircraft identification) RELEASED FOR DEPARTURE IN (number of minutes) MINUTES

and if required,

IF NOT OFF IN (number of minutes) MINUTES, ADVISE (facility) OF INTENTIONS WITHIN (number of minutes) MINUTES.

1. PARAGRAPH NUMBER AND TITLE: 4−8−1. APPROACH CLEARANCE

2. BACKGROUND: There is no prescribed phraseology in the order to cancel a previously issued approach clearance. "Cancel Approach Clearance" has been used in the past throughout the NAS when it has been necessary to terminate an approach procedure.

3. CHANGE:

OLD	**NEW**
4−8−1. APPROACH CLEARANCE	**4−8−1. APPROACH CLEARANCE**
Title through **a6**	No Change
PHRASEOLOGY− *CLEARED (type) APPROACH.* *(To authorize a pilot to execute his/her choice of instrument approach),* *CLEARED APPROACH.* *(Where more than one procedure is published on a single chart and a specific procedure is to be flown),* *CLEARED (specific procedure to be flown) APPROACH.* *(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)* *CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.* *(When the title of the approach procedure contains "or LOC")* *CLEARED LOCALIZER APPROACH*	***PHRASEOLOGY−*** *CLEARED (type) APPROACH.* *(To authorize a pilot to execute his/her choice of instrument approach),* *CLEARED APPROACH.* *(Where more than one procedure is published on a single chart and a specific procedure is to be flown),* *CLEARED (specific procedure to be flown) APPROACH.* *(To authorize a pilot to execute an ILS or an LDA approach when the glideslope is out of service)* *CLEARED (ILS/LDA) APPROACH, GLIDESLOPE UNUSABLE.* *(When the title of the approach procedure contains "or LOC")* *CLEARED LOCALIZER APPROACH*
Add	***(When it is necessary to cancel a previously issued approach clearance)*** ***CANCEL APPROACH CLEARANCE (additional instructions as necessary)***

1. PARAGRAPH NUMBER AND TITLE: 4−8−1. APPROACH CLEARANCE

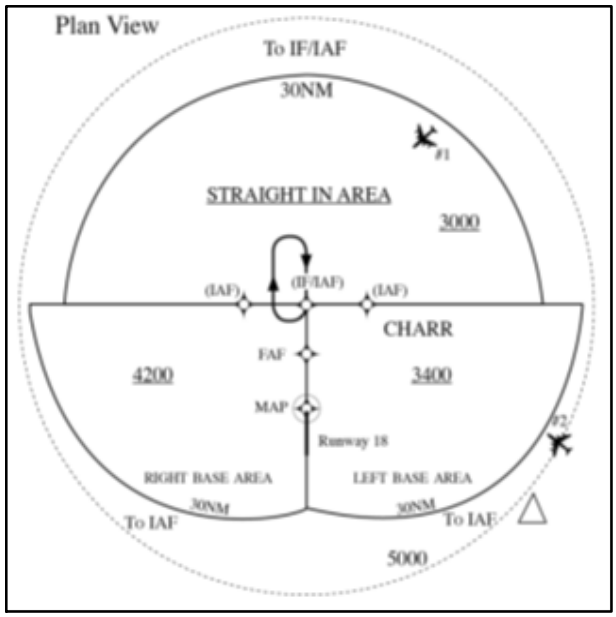
2. BACKGROUND: A workgroup was formed to investigate an event that occurred on April 16, 2015. The preliminary findings stated that FAA Order 7110.65 does not provide adequate guidance regarding how to issue an approach clearance to an aircraft that is below the terminal arrival area when it begins the approach. It was recommended that the order be amended to provide this guidance to controllers.

3. CHANGE:

OLD	**NEW**
4−8−1. APPROACH CLEARANCE	**4−8−1. APPROACH CLEARANCE**
Title through **i**	No Change
j. Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under subpara b1 and b2 above. (See FIG 4−8−6.)	**j.** Where a terminal arrival area (TAA) has been established to support RNAV approaches, use the procedures under **subparagraph** b above. (See FIG 4−8−6.)
Add	***NOTE−*** ***1. Aircraft that are within the lateral boundary of a TAA, and at or above the TAA minimum altitude, are established on the approach and may be issued an approach clearance without an altitude restriction.***
Add	***2. The TAA minimum altitude may be higher than the MVA/MIA. If an aircraft is below the TAA minimum altitude, it must either be assigned an altitude to maintain until established on a segment of a published route or instrument approach procedure, or climbed to the TAA altitude.***
EXAMPLE− *Aircraft 1: The aircraft has crossed the TAA boundary and is therefore established on a segment of the approach. "Cleared R−NAV Runway One Eight Approach."*	***EXAMPLE−*** *Aircraft 1: The aircraft* ***is at or above the minimum TAA altitude and within the lateral boundary of the TAA.*** *"Cleared R−NAV Runway One Eight Approach."*
Aircraft 2: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR Section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One−Eight Approach."	*Aircraft 2:* ***The MVA is 3000 feet and the aircraft is level at 4000 feet. The TAA minimum altitude is 4200 feet. The aircraft must be assigned an altitude to maintain until established on a segment of the approach. "Cross RIGHT at or above three thousand, cleared R−NAV Runway One Eight Approach."***
Add	***Aircraft 3: The aircraft is inbound to the CHARR IAF on an unpublished direct route at 7,000 feet. The minimum IFR altitude for IFR operations (14 CFR Section 91.177) along this flight path to the IAF is 5,000 feet. "Cleared direct CHARR, maintain at or above five thousand until entering the TAA, cleared RNAV Runway One−Eight Approach."***

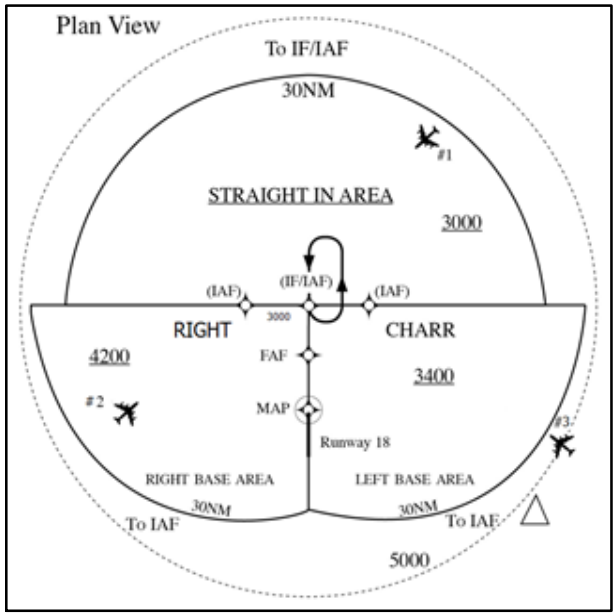
OLD

FIG 4–8–6
Basic "T" and TAA Design



NEW

FIG 4–8–6
Basic "T" and TAA Design



1. PARAGRAPH NUMBER AND TITLE: 5−6−3. VECTORS BELOW MINIMUM ALTITUDE

2. BACKGROUND: Diverse Vector Areas (DVAs) are a tool available to facility managers to permit vectoring of departures while below the Minimum Vectoring Altitude (MVA) or Minimum IFR Altitude (MIA) when requested by the facility and approved by Aeronautical Information Services, Instrument Flight Procedures Group. Questions have arisen if Enroute facilities are also afforded the benefits of a DVA given the existing language in Paragraph 5−6−3c. The Flight Standards Service (AFS) in the development of the DVA criteria does not restrict the type of facility that may use a DVA should one be requested and approved for the facility at a specific airport.

3. CHANGE:

OLD	NEW
5−6−3. VECTORS BELOW MINIMUM ALTITUDE	**5−6−3. VECTORS BELOW MINIMUM ALTITUDE**
Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the radar antenna and before it reaches the minimum altitude for IFR operations if separation from prominent obstacles shown on the radar scope is applied in accordance with the following:	**a.** Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the radar antenna and before it reaches the minimum altitude for IFR operations if separation from prominent obstacles shown on the radar scope is applied in accordance with the following:
b. If the flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle.	**1.** If the flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle.
b. If the flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle.	**2.** If the flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude at least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle.
REFERENCE− *P/CG Term − Obstacle.* *P/CG Term − Obstruction.* *P/CG Term − Prominent Obstacle.*	No Change
c. At those locations where diverse vector areas (DVA) have been established, terminal radar facilities may vector aircraft below the MVA/MIA within those areas and along those routes described in facility directives.	**b**. 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.
REFERENCE− *FAAO JO 7210.3, Para 3−9−5, Establishing Diverse Vector Area/s (DVA).*	***REFERENCE−*** *FAAO JO 7210.3, Para 3−8−5, Establishing Diverse Vector Area/s (DVA).*

1. PARAGRAPH NUMBER AND TITLE: 5−7−1. APPLICATION

2. BACKGROUND: A request was made from the ERAM program office to allow the application of speed adjustments to be 5 knots when Ground Interval Management−Spacing (GIM−S) aircraft are involved. After research and coordination was accomplished it was decided that it would be in the best interest of the NAS to make the change available to all speed adjustments rather than an exception for GIM−S involved aircraft.

3. CHANGE:

OLD	NEW
5−7−1. APPLICATION	**5−7−1. APPLICATION**
Title through **e**	No Change
f. Express speed adjustments in terms of knots based on indicated airspeed (IAS) in 10−knot increments. At or above FL 240, speeds may be expressed in terms of Mach numbers in 0.01 increments for turbojet aircraft with Mach meters. (i.e., Mach 0.69, 0.70, 0.71, etc.).	**f.** Express speed adjustments in terms of knots based on indicated airspeed (IAS) in **5**−knot increments. At or above FL 240, speeds may be expressed in terms of Mach numbers in 0.01 increments for turbojet aircraft with Mach meters. (i.e., Mach 0.69, 0.70, 0.71, etc.).

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1. PARAGRAPH NUMBER AND TITLE: 5−7−3. MINIMA

2. BACKGROUND: AFS−400 requested assistance from the ATO regarding the issuance of inappropriate ATC speed assignments that are contrary to federal regulations.

3. CHANGE:

OLD	NEW
5−7−3. MINIMA	**5−7−3. SPEED ASSIGNMENTS**
When assigning airspeeds, use the following recommended minima:	When assigning airspeeds, use the following:
a	No Change
NOTE−	***NOTE−***
1. *On a standard day the Mach numbers equivalent to 250 knots CAS (subject to minor variations) are:*	***1.*** *On a standard day the Mach numbers equivalent to 250 knots CAS (subject to minor variations) are:*
FL 240−0.6	*FL 240−0.6*
FL 250−0.61	*FL 250−0.61*
FL 260−0.62	*FL 260−0.62*
FL 270−0.64	*FL 270−0.64*
FL 280−0.65	*FL 280−0.65*
FL 290−0.66.	*FL 290−0.66.*
2. *If a pilot is unable to comply with the speed assignment, the pilot will advise.*	***2.*** ***A pilot will advise if unable to comply with the speed assignment.***
b. When an operational advantage will be realized, speeds lower than the recommended minima may be applied.	**b. To aircraft operating beneath Class B airspace or in a VFR corridor designated through Class B airspace: assign a speed not more than 200 knots.**
c. To arrival aircraft operating below 10,000 feet:	No Change
1. Turbojet aircraft. A speed not less than 210 knots; except when the aircraft is within 20 flying miles of the runway threshold of the airport of intended landing, a speed not less than 170 knots.	**1.** Turbojet aircraft**:**

Add	**(a) Assign a speed not less than 210 knots, except for the aircraft as specified in subparagraph b above, or**
Add	**(b) Assign a speed not less than 170 knots when the aircraft is within 20 flying miles of the runway threshold.**
2. Reciprocating engine and turboprop aircraft. A speed not less than 200 knots; except when the aircraft is within 20 flying miles of the runway threshold of the airport of intended landing, a speed not less than 150 knots.	**2.** Reciprocating and turboprop aircraft**:**
Add	**(a) Assign a speed not less than 200 knots, or**
Add	**(b) Assign a speed not less than 150 knots when the aircraft is within 20 flying miles of the runway threshold**.
d. Departures:	**d. To d**epartures:
1. Turbojet aircraft. A speed not less than 230 knots.	**1.** Turbojet aircraft**: assign a** speed not less than 230 knots.
2. Reciprocating engine and turboprop aircraft. A speed not less than 150 knots.	**2.** Reciprocating and turboprop aircraft**: assign a** speed not less than 150 knots.
e. Helicopters. A speed not less than 60 knots.	**e. To h**elicopters**: assign a** speed not less than 60 knots.
REFERENCE– *FAAO JO 7110.65, Para 5−7−2, Methods.*	No Change
Add	**f. Lower speeds may be assigned when operationally advantageous.**

Add	***NOTE–*** ***1. A pilot operating at or above 10,000 feet MSL on an assigned speed adjustment greater than 250 knots is expected to comply with 14 CFR Section 91.117(a) when cleared below 10,000 feet MSL, within domestic airspace, without notifying ATC. Pilots are expected to comply with the other provisions of 14 CFR Section 91.117 without notification.*** ***2. Speed restrictions of 250 knots do not apply to aircraft operating beyond 12 NM from the coastline within the U.S. Flight Information Region, in offshore Class E airspace below 10,000 feet MSL. However, in airspace underlying a Class B airspace area designated for an airport, or in a VFR corridor designated through such a Class B airspace area, pilots are expected to comply with the 200 knot speed limit specified in 14 CFR Section 91.117(c). (See 14 CFR Sections 91.117(c) and 91.703.)*** ***3. The phrases "maintain maximum forward speed" and "maintain slowest practical speed" are primarily intended for use when sequencing a group of aircraft. As the sequencing plan develops, it may be necessary to determine the specific speed and/or make specific speed assignments.***
Add	***REFERENCE–*** ***FAAO JO 7110.65, Para 5–7–2, Methods.*** ***14 CFR Sections 91.117(c) and 91.703.***

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1. PARAGRAPH NUMBER AND TITLE: 5–9–6. SIMULTANEOUS DEPENDENT APPROACH

2. BACKGROUND: The Flight Standards Service recently released technical report DOT–FAA–AFS–450–88, Safety Study of Reducing Diagonal Separation from 2.0 Nautical Miles to 1.5 Nautical Miles for Dependent Approaches to Parallel Runways Spaced between 4,300 feet and 9,000 feet. The report, generated at the request of Air Traffic, permits the use of 1.5 NM radar separation diagonally when runway centerlines are separated by more than 3,600 feet but no more than 8,300 feet. The application of 1.5 NM diagonal minima ensures aircraft remain staggered on adjacent approaches. This reduces the risk of collision from aircraft inadvertently deviating from the final approach course.

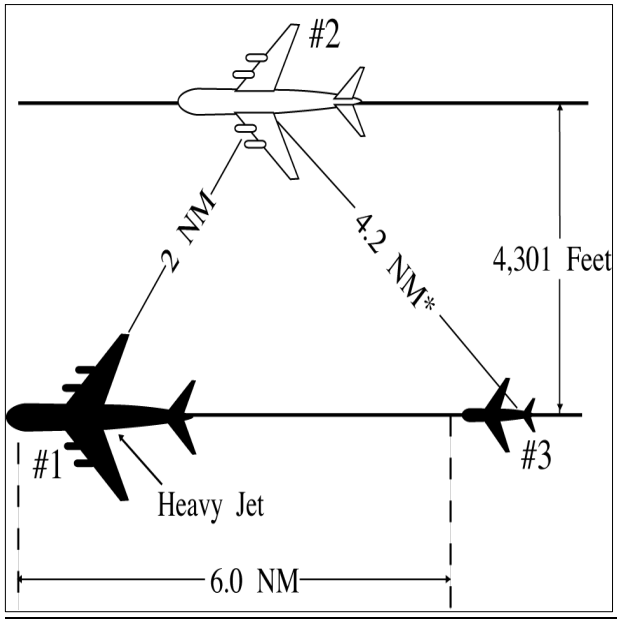
3. CHANGE:

OLD	NEW
5–9–6. SIMULTANEOUS DEPENDENT APPROACH	**5–9–6. SIMULTANEOUS DEPENDENT APPROACH**
Title through **a2** ***EXAMPLE***	No Change
3. Provide a minimum of 1.5 miles radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are more than 3,600 feet but no more than 4,300 feet apart.	**3.** Provide a minimum of 1.5 miles radar separation diagonally between successive aircraft on adjacent final approach courses when runway centerlines are more than 3,600 feet but no more than **8,300** feet apart.

FIG 5–9–5 and ***EXAMPLE***	No Change
4. Provide a minimum of 2 miles radar separation diagonally between successive aircraft on adjacent final approach courses where runway centerlines are more than 4,300 feet but no more than 9,000 feet apart.	4. Provide a minimum of 2 miles radar separation diagonally between successive aircraft on adjacent final approach courses where runway centerlines are more than **8,300** feet but no more than 9,000 feet apart.

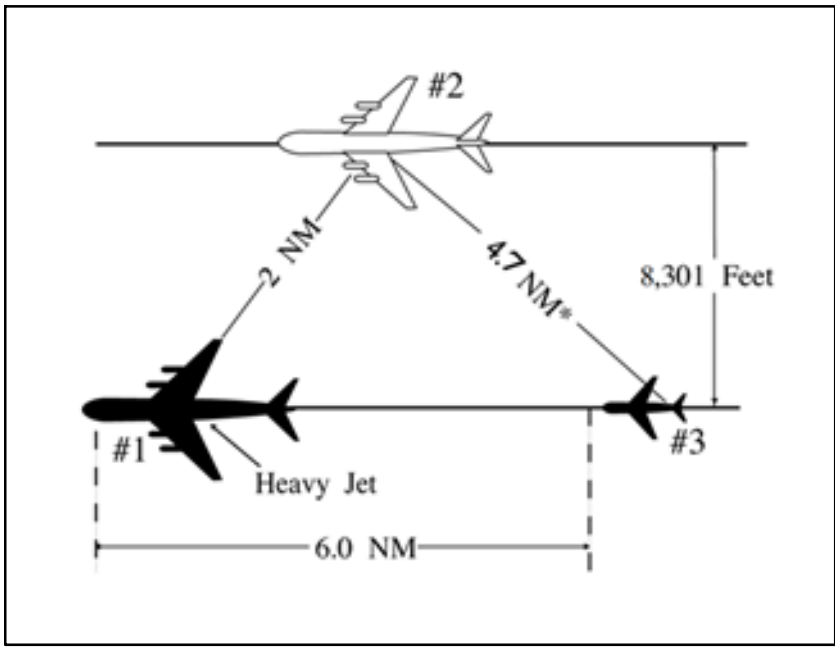
OLD

FIG 5–9–6
Simultaneous Dependent Approaches



NEW

FIG 5−9−6
Simultaneous Dependent Approaches



EXAMPLE−
*In FIG 5−9−6, Aircraft 2 is 2 miles from heavy Aircraft 1. Aircraft 3 is a small aircraft and is 6 miles from Aircraft 1. *The resultant separation between Aircraft 2 and 3 is at least 4.2 miles.*

EXAMPLE−
*In FIG 5−9−6, Aircraft 2 is 2 miles from heavy Aircraft 1. Aircraft 3 is a small aircraft and is 6 miles from Aircraft 1. *The resultant separation between Aircraft 2 and 3 is at least 4.7 miles.*

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1. PARAGRAPH NUMBER AND TITLE: 5−9−7. SIMULTANEOUS INDEPENDENT APPROACHES− DUAL & TRIPLE

2. BACKGROUND: Significant changes to Simultaneous Parallel Approach paragraphs occurred on December 10, 2015. Current provisions for the use of Final Monitor Aid (FMA) require its use to monitor the No−Transgression Zone (NTZ) when dual runways centerlines are 4,300 feet or less. In the interest of consistency and with Flight Standards Concurrence, the need to use FMA to monitor the NTZ is changed to be consistent with the requirements for Precision Runway Monitor (PRM) procedures.

3. CHANGE:

OLD

5−9−7. SIMULTANEOUS INDEPENDENT APPROACHES−DUAL & TRIPLE

Title through **b**

1. Dual parallel runway centerlines are at least 3,000 and no more than 4,300 feet apart.

NEW

5−9−7. SIMULTANEOUS INDEPENDENT APPROACHES−DUAL & TRIPLE

No Change

1. Dual parallel runway centerlines are at least 3,000 and **less** than 4,300 feet apart.

b2 and b3	No Change
NOTE– *FMA is not required to monitor the NTZ for runway centerlines greater than 4,300 feet for dual runways, and 5,000 feet or greater for triple operations.*	***NOTE–*** *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.*

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1. PARAGRAPH NUMBER AND TITLE: 7−2−1. VISUAL SEPARATION

2. BACKGROUND: Paragraph 7−2−1, subparagraph a2(e) states: "Advise the pilots if the radar targets appear likely to merge." Paragraph 7−2−1, subparagraph c2(d) states: "Advise the pilot if the radar targets appear likely to converge." Additionally, the contents of paragraph 7−2−1, subparagraphs a2(d) & (e) and c2(d) & (e) are the same, yet appear in a different order in their respective subparagraphs. This incongruity needs to be addressed.

3. CHANGE:

OLD	NEW
7−2−1. VISUAL SEPARATION	**7−2−1. VISUAL SEPARATION**
Title through **b2(d)** ***NOTE***	No Change
(e) Advise the pilot if the radar targets appear likely to converge.	**(e) If the aircraft are on converging courses, inform the other aircraft of the traffic and that visual separation is being applied.**
(f) If 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.**
Add	***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.***
Add	***EXAMPLE–*** ***"Radar targets appear likely to merge."***

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1. PARAGRAPH NUMBER AND TITLE: 7−8−2. CLASS C SERVICES

2. BACKGROUND: A recent interpretation provided to the field concerning the availability of Class C services when a radar outage occurs necessitates this change. Paragraph 7−8−2 first emerged in May 1986, when Airspace Reclassification had not yet occurred. At that time, available radar platforms only allowed for a single radar site to be incorporated. Additionally, the paragraph content has remained unchanged except for the introduction of Airspace Reclassification in 1992. In today's NAS, this legacy content is no longer consistent with our surveillance capabilities. Since this provision is unchanged and where there is more than a single radar sensor available, the agency expectation is to leverage all available resources at all times to provide the maximum level of radar services possible that enhances safety to all aircraft.

3. CHANGE:

OLD	NEW
7−8−2. CLASS C SERVICES	**7−8−2. CLASS C SERVICES**
Title through **d**	No Change

e. When a radar outage occurs, advise aircraft that Class C services are not available and, if appropriate, when to contact the tower.	**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**.
Add	***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.***

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1. PARAGRAPH NUMBER AND TITLE:
8−7−3. LONGITUDINAL SEPARATION
8−8−3. LONGITUDINAL SEPARATION
8−9−3. LONGITUDINAL SEPARATION
8−10−3. LONGITUDINAL SEPARATION

2. BACKGROUND: ADS−C Climb Descend Procedure (CDP) is an additional capability fully compatible with the existing Advanced Technologies and Ocean Procedures (ATOP) oceanic automation system. The ADS−C CDP utilizes existing ADS−C aircraft equipage and air traffic control capabilities to allow more flights to achieve their preferred vertical profiles, and thereby increases both capacity and efficiency in the oceanic domain. The ADS−C CDP was designed to improve service to appropriately equipped aircraft by providing air traffic controllers with another option for initiating an altitude change when the existing separation minima do not allow aircraft to climb or descend through the altitude of a blocking aircraft.

3. CHANGE:

OLD	**NEW**
8−7−3. LONGITUDINAL SEPARATION	**8−7−3. LONGITUDINAL SEPARATION**
Title through **e4**	No Change
Add	**5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:**
Add	**(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;**
Add	**(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:**
Add	**(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or**
Add	**(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft**
Add	**(c) The altitude difference between aircraft is not more than 2000 ft;**

Add	**(d) The clearance is for a climb or descent of 4000 ft or less;**
Add	**(e) Both aircraft are filed as single flights not flying in formation with other aircraft;**
Add	**(f) Both aircraft are in level flight at a single altitude;**
Add	**(g) Both aircraft are same direction;**
Add	**(h) Neither aircraft are on a weather deviation;**
Add	**(i) Neither aircraft have an open CPDLC request for a weather deviation;**
Add	**(j) Neither aircraft are on an offset with a rejoin clearance; and**
Add	**(k) The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.**

OLD	NEW
8−8−3. LONGITUDINAL SEPARATION	**8−8−3. LONGITUDINAL SEPARATION**
Title through **f4**	No Change
Add	**5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:**
Add	**(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;**
Add	**(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:**
Add	**(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or**
Add	**(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft**
Add	**(c) The altitude difference between aircraft is not more than 2000 ft;**
Add	**(d) The clearance is for a climb or descent of 4000 ft or less;**
Add	**(e) Both aircraft are filed as single flights not flying in formation with other aircraft;**
Add	**(f) Both aircraft are in level flight at a single altitude;**
Add	**(g) Both aircraft are same direction;**

Add	**(h) Neither aircraft are on a weather deviation;**
Add	**(i) Neither aircraft have an open CPDLC request for a weather deviation;**
Add	**(j) Neither aircraft are on an offset with a rejoin clearance; and**
Add	**(k) The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.**

OLD	NEW
8−9−3. LONGITUDINAL SEPARATION	**8−9−3. LONGITUDINAL SEPARATION**
Title through **c4**	No Change
Add	**5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:**
Add	**(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;**
Add	**(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:**
Add	**(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or**
Add	**(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft**
Add	**(c) The altitude difference between aircraft is not more than 2000 ft;**
Add	**(d) The clearance is for a climb or descent of 4000 ft or less;**
Add	**(e) Both aircraft are filed as single flights not flying in formation with other aircraft;**
Add	**(f) Both aircraft are in level flight at a single altitude;**
Add	**(g) Both aircraft are same direction;**
Add	**(h) Neither aircraft are on a weather deviation;**
Add	**(i) Neither aircraft have an open CPDLC request for a weather deviation;**

Add	**(j) Neither aircraft are on an offset with a rejoin clearance; and**
Add	**(k) The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.**

OLD	NEW
8−10−3. LONGITUDINAL SEPARATION	**8−10−3. LONGITUDINAL SEPARATION**
Title through **c4**	No Change
Add	**5. Aircraft on the same track may be cleared to climb or descend through the level of another aircraft provided:**
Add	**(a) The longitudinal distance between the aircraft is determined from near simultaneous ADS−C demand reports and the ATOP software is used to ensure the following conditions are met;**
Add	**(b) The longitudinal distance between the aircraft, as determined in a) above, is not less than:**
Add	**(1) 15 NM when the preceding aircraft is at the same speed or faster than the following aircraft; or**
Add	**(2) 25 NM when the following aircraft is not more than Mach 0.02 faster than the preceding aircraft.**
Add	**(c) The altitude difference between aircraft is not more than 2000 ft;**
Add	**(d) The clearance is for a climb or descent of 4000 ft or less;**
Add	**(e) Both aircraft are filed as single flights not flying in formation with other aircraft;**
Add	**(f) Both aircraft are in level flight at a single altitude;**
Add	**(g) Both aircraft are same direction;**
Add	**(h) Neither aircraft are on a weather deviation;**
Add	**(i) Neither aircraft have an open CPDLC request for a weather deviation;**
Add	**(j) Neither aircraft are on an offset with a rejoin clearance; and**
Add	**(k) The clearance is issued with a restriction that ensures vertical separation is re−established within 15 minutes from the first demand report request.**