

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

JO 7110.65W CHG 3

Air Traffic Organization Policy

Effective Date: 04/27/2017

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 Retain this transmittal until superseded by a new basic order.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.

Original Signed By: Elizabeth L. Ray

Elizabeth L. Ray Vice President, Mission Support Services Air Traffic Organization

Date: March 8, 2017

Explanation of Changes Change 3

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

a. 1-2-6. ABBREVIATIONS

This change removes legacy terminology no longer used.

b. 1–2–6. ABBREVIATIONS 3–4–20. RUNWAY STATUS LIGHTS (RWSL)

3–6–5. RADAR–ONLY MODE

This change adds Airport Surface Surveillance Capability (ASSC) to paragraphs 1–2–6 and 3–6–5. This change also amends ASD–X System to ASDE System in paragraph 3–4–20.

c. 2–1–2. DUTY PRIORITY 2–1–4. OPERATIONAL PRIORITY

These changes add subparagraph c to paragraph 2-1-2, stating that solicitation and dissemination of weather information is a duty priority. It also moves the existing subparagraph c to d. Also, this change addresses paragraph 2-1-4, to clarify requirements for ATC service regarding operational priority.

d. 2–3–8. AIRCRAFT EQUIPMENT SUFFIX

This change reinstates the /H suffix in subparagraph d. Adaptation of the /O is still being discussed and may be instituted at a future date. This change cancels and incorporates FAA Notice JO 7110.727, dated November 10, 2016.

e. 2–6–1. FAMILIARIZATION 2–6–2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS) 2–6–3. PIREP INFORMATION 2–6–4. WEATHER AND CHAFF SERVICES 2–6–5. CALM WIND CONDITIONS 2–6–6. REPORTING WEATHER

CONDITIONS

2–6–7. DISSEMINATING WEATHER INFORMATION

This change reorganizes and consolidates information contained in chapter 2. Much of the wording remains the same. ATC requirements are highlighted as they pertain to solicitation of Pilot Weather Reports (PIREPs), issuance of areas of weather along routes of flight, and transmitting of weather information soon enough to be effective in assisting pilots in making sound weather avoidance decisions.

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

Where applicable and when covered in a local directive, this change allows facilities to shift the responsibility of advising pilots of the altimeter setting from the controller who issues the descent clearance to the controller who controls the airspace where the aircraft exits Class A airspace.

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

This change removes the reference to FAA Order 8260.3 and adds a reference to the relevant advisory circular.

h. 3-9-4. LINE UP AND WAIT (LUAW)

This change deletes subparagraph 3–9–4e. USAF/ USN will now follow subparagraph 3–9–4d. This change also aligns the requirement to advise landing traffic of aircraft holding in position with subparagraph 3–10–5c.

i. 3–9–6. SAME RUNWAY SEPARATION 3–9–7. WAKE TURBULENCE SEPARA-TION FOR INTERSECTION DEPARTURES 3–9–8. INTERSECTING RUNWAY/IN-TERSECTING FLIGHT PATH OPERATIONS 3–9–9. NONINTERSECTING CON-VERGING RUNWAY OPERATIONS 3–9–10. TAKEOFF CLEARANCE 5–5–4. MINIMA

This change adds a requirement to treat parallel runways separated by less than 700 feet as the same runway for small aircraft departing behind B757 aircraft to paragraphs 3–9–6, 3–9–7, and 5–5–4; moves the requirement to provide wake turbulence

separation for aircraft departing parallel runways separated by 2,500 or more from paragraph 3–9–8 to paragraph 3–9–6; and contains updates to paragraphs 3–9–9 and 3–9–10. This change cancels and incorporates FAA Notice JO 7110.728 dated December 15, 2016.

j. 4–3–2. DEPARTURE CLEARANCES 4–3–3. ABBREVIATED DEPARTURE CLEARANCE 4–5–7. ALTITUDE INFORMATION

5–6–2. METHODS

This change reverts to the practice of issuing "Maintain" for all departure clearances containing a SID without any published crossing restrictions, radar vector SIDs and those SIDs with a Radar Vector Segment. Departure procedures with published crossing restrictions will retain the "Climb Via" phraseology. A note is added to convey that "Climb Via except Maintain" phraseology to emphasize a procedural constraint is an inappropriate use of the phraseology. The change also removes references to PDC in abbreviated departure clearances due to recent technology changes and removes "Comply with Restrictions" phraseology as it is no longer necessary due to the use of Climb/Descend Via phraseology.

k. 4-6-1. CLEARANCE TO HOLDING FIX

This change incorporates the provisions of the memorandum to stipulate that the "as published" holding pattern be on the aircraft's assigned procedure or route of flight.

I. 5–1–2. ALIGNMENT ACCURACY CHECK

This change accounts for the Digital Terminal Automation Systems (DTAS) and the En route Automation System (EAS) now fielded, its capabilities, and changes the make-up of the paragraph to apply to only non DTAS locations. DTAS and EAS conducts continuous self-monitoring checks for performance and alignment.

m. 5–2–9. UNMANNED AIRCRAFT SYS-TEMS (UAS) LOST LINK

This change adds a new paragraph. The change authorizes the exclusive use of non-discrete beacon code 7400 for lost link conditions of UASs. It also provides guidance for the air traffic controller on how to handle the lost link situation. This change cancels and incorporates FAA Notice JO 7110.724, dated November 11, 2016.

n. 5–2–24. INOPERATIVE OR MALFUNC-TIONING ADS–B TRANSMITTER 5–2–26. ADS–B ALERTS

This change deletes the reference to Terminal in paragraph 5–2–24, as this paragraph applies NAS wide and adds guidance for controllers receiving CSMM and duplicate ICAO address alerts.

o. 5-5-9. SEPARATION FROM OBSTRUC-TIONS

This change harmonizes the order with the guidance in the interpretation and returns the historical intent of the provision, that was lost in 2003 when the paragraph was changed, removing the condition that obstructions must be prominent obstructions displayed as permanent echoes.

p. 5-8-2. INITIAL HEADING

This change clarifies the requirement for controllers to assign an altitude to an aircraft when they issue an initial heading that takes the aircraft off of a departure procedure with crossing restrictions, and adds a note to clarify the conditions where ATC is responsible for terrain and obstruction avoidance when issuing control instructions below the minimum IFR altitude.

q. 5–14–3. COMPUTER ENTRY OF FLIGHT PLAN INFORMATION

This change eliminates the note that had introduced different definitions for a transferring controller or receiving controller regarding the current status of the aircraft. It also removes the language that implies the transferring controller is the only one allowed to use the Local Interim Altitude (LIA). The change also adds language that restricts modification of a data block prior to establishing communication with the aircraft. Clarification is added stating the verbal coordination which occurs must identify who will modify the data block.

r. 6–7–5. INTERVAL MINIMA

This change reinstates the basic minima and only contains wake turbulence separations that are greater than 2 minutes or 5 miles.

s. 7–2–1. VISUAL SEPARATION

This change reinstates the restriction to providing visual separation behind Super aircraft.

t. 7–4–1. VISUAL APPROACH

This change clarifies that IFR separation standards apply until the pilot has requested to cancel their IFR flight plan or has landed at airfields with and without operating control towers.

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

This changes "degrade" to "reduce" for clarification.

v. Appendix B. Standard Operating Practice (SOP) for Aircraft Deviating for Weather Near Active Special Activity Airspace (SAA)

The air traffic procedures for handling weather

related deviations into Special Activity Airspace (SAA), which currently resides in various paragraphs in FAA Order JO 7110.65, will now be entirely contained in Appendix B. This change cancels and incorporates FAA Notice JO 7110.729, dated December 15, 2016.

w. Editorial Changes

There were editorial changes made to correct references, FAA nomenclature, and titles. They include paragraphs 2-7-2, 3-6-3, 3-7-2, 4-1-5, 4-6-8, 4-8-1, 7-2-1, 9-2-21.

x. 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
ASSC	Airport Surface Surveillance Capability
ATC	Air traffic control
ΑΤCAA	ATC assigned airspace
ATCSCC	David J. Hurley Air Traffic Control System Command Center
ATD	Along-Track Distance
ATIS	Automatic Terminal Information Service
АТО	Air Traffic Organization
ATO COO	Air Traffic Organization Chief Operating Officer
АТОР	Advanced Technologies and Oceanic Procedures
ATS	Air Traffic Service
AWOS	Automated Weather Observing System
BAASS	Bigelow Aerospace Advanced Space Studies
BASE	Cloud base
СА	Conflict Alert
CARCAH	Chief, Aerial Reconnaissance Coordination, All Hurricanes
CARF	Central Altitude Reservation Function
CARTS	Common ARTS
САТ	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
СРМЕ	Calibration Performance Monitor Equipment
СТА	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
ЕТА	Estimated time of arrival
FAA	Federal Aviation Administration

Abbreviation	Meaning
FAAO	FAA Order
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
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
РРІ	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

Abbreviation	Meaning
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
ТАА	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
ТМС	Traffic Management Coordinator
TMU	Traffic Management Unit
TRACON	Terminal Radar Approach Control
TRSA	Terminal radar service area

Chapter 2. General Control

Section 1. General

2-1-1. ATC SERVICE

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

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

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

2. Supports National Security and Homeland Defense missions.

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

1. Volume of traffic.

2. Frequency congestion.

3. Quality of surveillance.

4. Controller workload.

5. Higher priority duties.

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

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

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

NOTE-

Pilots are required to abide by CFRs or other applicable regulations regardless of the application of any procedure or minima in this order. **2.** Other procedures/minima are prescribed in a letter of agreement, FAA directive, or a military document, or:

NOTE-

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

REFERENCE-

FAA Order JO 7110.65, Para 1–1–9 Procedural Letters of Agreement.

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

REFERENCE-

FAA Order JO 7110.65, Para 2–1–6 Safety Alert. FAA Order JO 7110.65, Chapter 10 Emergencies. FAA Order JO 7110.65, Para 5–1–8 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-

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

NOTE-

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

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

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

REFERENCE– FAA Order JO 7610.4 Special Operations.

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

NOTE-

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

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

2-1-3. PROCEDURAL PREFERENCE

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

b. Use 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

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

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 handling 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 handling 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-

Good judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.

c. Provide priority handling and 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-

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

d. Provide priority handling and maximum assistance to SAR aircraft performing a SAR mission.

REFERENCE-

FAA Order JO 7110.65, Para 10-1-3, Providing Assistance.

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

f. Provide priority handling to 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-

FAA Order JO 7610.4, Para 12-1-1 Applications.

g. Provide priority handling to any civil or military aircraft using the code name "FLYNET."

REFERENCE-

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

h. Provide priority handling to 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 priority handling to USAF aircraft engaged in aerial sampling missions using the code name "SAMP."

REFERENCE-

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

j. Provide priority handling to Special Air Mission aircraft when SCOOT is indicated in the remarks section of the flight plan or used 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-

FAA Order JO 7610.4, Para 12-6-1, Applications.

k. 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-

FAA Order JO 7110.65, Para 9–2–19, Weather Reconnaissance Flights.

I. Provide priority 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-

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

m. Provide priority 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-

FAA Order JO 7110.65, Para 9-1-3, Flight Check Aircraft.

n. IFR aircraft must have priority over SVFR aircraft.

REFERENCE-

FAA Order JO 7110.65, Chapter 7, Section 5, Special VFR (SVFR).

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– FAA Order JO 7110.65, Para 2–3–2, En Route Data Entries. FAA Order JO 7110.65, Para 2–2–15, North American Route Program (NRP) Information. FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments. FAA Order 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-FAA Order 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-

FAA Order JO 7110.65, Para 5–14–1, Conflict Alert (CA) and Mode C Intruder (MCI) Alert.

FAA Order JO 7110.65, Para 5–14–2, En Route Minimum Safe Altitude Warning (E–MSAW).

FAA Order JO 7110.65, Para 5-15-6, CA/MCI.

FAA Order JO 7110.65, Para 5–2–24, Altitude Filters. FAA Order JO 7110.65, Para 2-1-21, Traffic Advisories

2-1-7. INFLIGHT EQUIPMENT MALFUNCTIONS

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

NOTE-

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

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

2-1-8. MINIMUM FUEL

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

NOTE-

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

2-1-9. REPORTING ESSENTIAL FLIGHT INFORMATION

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

NOTE-

FSSs are responsible for classifying and disseminating Notices to Airmen.

REFERENCE-

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

2-1-10. NAVAID MALFUNCTIONS

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

1. Request a report from a second aircraft.

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

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-FAA Order 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-

FAA Order 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-

FAA Order 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-

FAA Order JO 7110.65, Para 2–1–15, Control Transfer. FAA Order JO 7110.65, Para 5–5–10, Adjacent Airspace. FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff. FAA Order 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.

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REFERENCE-
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FAA Order JO 7110.65, Para 2–1–14, Coordinate Use of Airspace. FAA Order JO 7110.65, Para 5–4–5, Transferring Controller Handoff. FAA Order 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-

FAA Order 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-

FAA Order JO 7110.65, Para 2–1–17, Radio Communications Transfer.

FAA Order JO 7110.65, Para 3–1–11, Surface Area Restrictions. FAA Order 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-

FAA Order JO 7110.65, Para 4–7–1, Clearance Information. FAA Order 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**-

FAA Order JO 7110.65, Para 2–1–21, Traffic Advisories. FAA Order JO 7110.65, Para 4–2–5, Route or Altitude Amendments. FAA Order 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-

FAA Order 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 FAA Order 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-

FAA Order 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.

4/24/17

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-FAA Order 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-

FAA Order 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-

FAA Order 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-

FAA Order JO 7110.65, Para 3–1–6, Traffic Information. FAA Order JO 7110.65, Para 7–2–1, Visual Separation. FAA Order 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– FAA Order 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 FAA Order 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-toground 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.

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

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

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

- (a) Departure areas and/or procedures.
- (b) Arrival procedures.
- (c) Overflight handling procedures.
- (d) Transition from radar to nonradar.
- (e) Transition from ARTS to non-ARTS.
- (f) Transition from ASR to CENRAP.
- (g) Transition to or from ESL.

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

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

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

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

2-3-5. AIRCRAFT IDENTITY

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

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

EXAMPLE-

"N12345." "TN5552Q." "AA1192." "LN751B."

NOTE-

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

b. Military Aircraft.

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

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

EXAMPLE-

"SAMP Three One Six."

3. Assigned double-letter 2–digit flight number.

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

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

TBL 2-3-6 Branch of Service Prefix

Prefix	Branch
А	U.S. Air Force
С	U.S. Coast Guard
G	Air or Army National Guard
R	U.S. Army
VM	U.S. Marine Corps
VV	U.S. Navy
CFC	Canadian Forces
CTG	Canadian Coast Guard

TBL 2-3-7 Military Mission Prefix

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

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

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

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

TBL 2–3–8 President and Family

TBL 2-3-9	
Vice President and	Family

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

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

2–3–6. AIRCRAFT TYPE

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

2–3–7. USAF/USN UNDERGRADUATE PILOTS

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

NOTE-

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

REFERENCE-

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

2-3-8. AIRCRAFT EQUIPMENT SUFFIX

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

b. GNSS-equipped aircraft:

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

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

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

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

EXAMPLE-

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

d. Utilize aircraft equipment suffix /H to indicate "RVSM-capable, no transponder."

NOTE-

/H is for ATC use only. Users are not authorized to file this suffix.

2-3-9. CLEARANCE STATUS

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

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

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

Section 6. Weather Information

2-6-1. FAMILIARIZATION

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

NOTE-

Every phase of flight has the potential to be impacted by weather, and emphasis must be placed on gathering, reporting and disseminating weather information.

2-6-2. PIREP SOLICITATION AND DISSEM-INATION

Emphasis must be placed on the solicitation and dissemination of PIREPs. Timely dissemination of PIREPs alerts pilots to significant weather reports. PIREPS also provide information required by ATC to provide for the safe and efficient use of airspace. This 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, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to flight safety.

REFERENCE-

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FAA Order JO 7110.65, Para 3–1–8, Low Level Wind
Shear/Microburst Advisories.
FAA Order JO 7110.65, Para 3–3–4, Braking Action.
P/CG Term– Braking Action.
FAA Order JO 7210.3, Para 6–3–1, Handling of SIGMETs, CWAs, and
PIREPs.
AIM, Para 7–5–9, Flight Operations in Volcanic Ash.
FAA Order JO 7210.3, Para 10–3–1, SIGMET and PIREP Handling
FAA Order JO 7110.10, Chapter 9, Section 2, Pilot Weather Report
(UA/UUA)
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a. Solicit PIREPs when requested, deemed necessary or any 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. When providing approach control services, ensure that at least one descent/climb-out PIREP, including cloud base(s), top(s), and other related phenomena, is obtained each hour.

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. Braking action reports.
- 8. Volcanic ash clouds.

9. Detection of sulfur gases (SO2 or H2S), associated with volcanic activity, in the cabin.

NOTE-

1. 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. SO2 is identifiable as the sharp, acrid odor of a freshly struck match. H2S has the odor of rotten eggs.

2. 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.

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. Disseminate PIREPs as follows:

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

NOTE-

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 Thirty-seven, previously reported wind shear, loss of two five knots at four hundred feet."

"Alaska One, a Boeing Seven Thirty-seven, previously reported wind shear, gain of two-five knots between niner hundred and six hundred feet, followed by a loss of five zero knots between five hundred feet and the surface."

REFERENCE-

AIM, Para 7-1-24, Wind Shear PIREPs.

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

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

(a) The appropriate intra-facility positions.

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

(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-

FAA Order JO 7110.65, Para 2-1-2, Duty Priority.

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

2–6–3. REPORTING WEATHER CONDI-TIONS

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

REFERENCE– FAA Order 10 7110 65 Para

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

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

1. When the official weather changes to a condition:

(a) Less than a 1,000-foot ceiling or below the highest circling minimum, whichever is greater.

(b) Where the visibility is less than 3 miles.

(c) Where conditions improve to values greater than those listed in (a) and (b).

2. When 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.

d. 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.

e. If the receiving facility informs you that weather reports are not required for a specific time period, discontinue the reports.

f. *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.

REFERENCE-

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

2–6–4. ISSUING WEATHER AND CHAFF AREAS

a. Controllers must issue pertinent information on observed/reported weather and chaff areas to potentially affected aircraft. Define the area of coverage in terms of:

1. Azimuth (by referring to the 12-hour clock) and distance from the aircraft and/or

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

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

REFERENCE-

P/CG Term- Precipitation Radar Weather Descriptions.

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). If applicable, AREA IS (number) MILES IN DIAMETER.

EXAMPLE-

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

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

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

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

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

PHRASEOLOGY-

DEVIATION (restrictions if necessary) APPROVED, WHEN ABLE, PROCEED DIRECT (name of NAVAID/WAYPOINT/FIX)

or

DEVIATION (restrictions if necessary) APPROVED, WHEN ABLE, FLY HEADING (degrees), VECTOR TO JOIN (airway) AND ADVISE.

EXAMPLE-

1. "Deviation 20 degrees right approved, when able proceed direct O'Neill VORTAC and advise." En Route: The corresponding fourth line entry is "D20R/ONL" or "D20R/F."

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

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

PHRASEOLOGY-

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

EXAMPLE-

"Deviation North of course approved, advise clear of weather."

En Route: In this case the corresponding fourth line entry is "DN," and the receiving controller must provide a clearance to rejoin the route in accordance with paragraph 2-1-15 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 REQUESTED DEVIATION, FLY HEADING (heading), ADVISE CLEAR OF WEATHER

or

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

EXAMPLE-

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

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 predetermined procedures. Emphasis should be made between: controller assigned headings, suggested headings, or pilot initiated deviations.

EXAMPLE-

"(call sign) assigned heading three three zero 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 to join J324 and advise."

k. The supervisory traffic management coordinator-in-charge/operations supervisor/ controller-in-charge must 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 must be reported to the technical operations technician and the air traffic supervisor must 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. DISSEMINATING OFFICIAL WEATH-ER 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 a FAA approved automation surface weather system.

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.

2–6–6. 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 (specific weather phenomenon) WITHIN (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 (specific weather phenomenon) WITHIN (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.

Section 7. Altimeter Settings

2-7-1. CURRENT SETTINGS

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

REFERENCE-

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

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

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

REFERENCE-

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

2-7-2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL

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

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

PHRASEOLOGY-

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

or

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

c. Issue the altimeter setting:

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

NOTE-

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

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

REFERENCE-

FAA Order JO 7110.65, Para 3-9-1, Departure Information.

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

REFERENCE-

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

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

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

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

NOTE-

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

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

e. When issuing clearance to descend below the lowest usable flight level, advise the pilot of the altimeter setting of the weather reporting station nearest the point the aircraft will descend below that flight level. Local directives may delegate this responsibility to an alternate sector when Optimized Profile Descents (OPD) commence in sectors consisting entirely of Class A airspace. **f.** Department of Defense (DOD) aircraft that are authorized to operate in restricted areas, MOAs, and ATC assigned airspace areas on "single altimeter settings" (CFR Exemption 2861A), must be issued altimeter settings in accordance with standard procedures while the aircraft are en route to and from the restricted areas, MOAs, and ATC assigned airspace areas.

NOTE-

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

REFERENCE-

FAA Order JO 7610.4, Appendix 22, Grant of Exemption No. 2861A -Single Altimeter Setting For Frequent Transit of FL180.

g. When the barometric pressure is greater than 31.00 inches Hg., issue the altimeter setting and:

1. En Route/Arrivals. Advise pilots to remain set on altimeter 31.00 until reaching final approach segment.

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

PHRASEOLOGY-

ALTIMETER, THREE ONE TWO FIVE, SET THREE ONE ZERO ZERO UNTIL REACHING THE FINAL APPROACH FIX.

or

ALTIMETER, THREE ONE ONE ZERO, SET THREE ONE ZERO ZERO PRIOR TO REACHING ONE THOUSAND THREE HUNDRED.

NOTE-

1. Aircraft with Mode C altitude reporting will be displayed on the controller's radar scope with a uniform altitude offset above the assigned altitude. With an actual altimeter of 31.28 inches Hg, the Mode C equipped aircraft will show 3,300 feet when assigned 3,000 feet. This will occur unless local directives authorize entering the altimeter setting 31.00 into the computer system regardless of the actual barometric pressure.

2. Flight Standards will implement high barometric pressure procedures by NOTAM defining the geographic area affected.

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

REFERENCE-

AIM, Para 7–2–2, Procedures. FAA Order JO 7110.65, Para 3–10–1, Landing Information.

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 2–6–2, PIREP Solicitation and Dissemination. 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."

3-4-16. HIGH SPEED TURNOFF LIGHTS

Operate high speed turnoff lights:

a. Whenever the associated runway lights are used for arriving aircraft. Leave them on until the aircraft has either entered a taxiway or passed the last light.

b. As required by facility directives to meet local conditions.

c. As requested by the pilot.

3-4-17. TAXIWAY LIGHTS

Operate taxiway lights in accordance with TBL 3-4-11, TBL 3-4-12, or TBL 3-4-13 except:

a. Where a facility directive specifies other settings or times to meet local conditions.

b. As requested by the pilot.

c. As you deem necessary, if not contrary to pilot request.

TBL 3-4-11 Three Step Taxiway Lights

Step	Visibility	
	Day	Night
3	Less than 1 mile	When requested
2	When requested	Less than 1 mile
1	When requested	1 mile of more

TBL 3-4-12 Five Step Taxiway Lights

Step	Visibility	
	Day	Night
5	Less than 1 mile	When requested
4	When requested	Less than 1 mile
3	When requested	1 mile or more
1 & 2	When requested	When requested

TBL 3-4-13 One Step Taxiway Lights

Day	Night
Less than 1 mile	On

NOTE-

AC 150/5340-30, Design and Installation Details for Airport Visual Aides, contains recommended brightness levels for variable setting taxiway lights.

3-4-18. OBSTRUCTION LIGHTS

If controls are provided, turn the lights on between sunset and sunrise.

3-4-19. ROTATING BEACON

If controls are provided, turn the rotating beacon on:

a. Between sunset and sunrise.

b. Between sunrise and sunset when the reported ceiling or visibility is below basic VFR minima.

3-4-20. RUNWAY STATUS LIGHTS (RWSL)

TERMINAL

RWSL is equipped with automatic intensity settings and must be operated on a continuous basis except under the following conditions:

a. If a pilot or vehicle report indicates any portion of the RWSL system is on and is not able to accept an ATC clearance; then

1. ATC must visually scan the entire runway. If the runway is observed to be clear and the lights are still illuminated, then the lights must be turned off and clearance re-issued.

2. If a portion of the runway is not visible from the tower, ATC must visually scan the ASDE system. If the runway is observed to be clear and the lights are still illuminated, then the lights must be turned off and clearance re-issued.

b. When the RWSL Operational Status displays "Lost Comm with System," consider the RWSL system out of service until checked and confirmed to be operational by technical operations personnel.

c. Once RWSL systems are turned off, they must remain off until returned to service by technical operations personnel.

d. Upon pilot request, adjust the light intensity.

Section 5. Runway Selection

3-5-1. SELECTION

a. Except where a "runway use" program is in effect, use the runway most nearly aligned with the wind when 5 knots or more or the "calm wind" runway when less than 5 knots (set tetrahedron accordingly) unless use of another runway:

NOTE-

1. If a pilot prefers to use a runway different from that specified, the pilot is expected to advise ATC.

2. At airports where a "runway use" program is established, ATC will assign runways deemed to have the least noise impact. If in the interest of safety a runway different from that specified is preferred, the pilot is expected to advise ATC accordingly. ATC will honor such requests and advise pilots when the requested runway is noise sensitive.

REFERENCE-

FAAO 8400.9, National Safety and Operational Criteria for Runway Use Programs.

- 1. Will be operationally advantageous, or
- 2. Is requested by the pilot.

b. When conducting aircraft operations on other than the advertised active runway, state the runway in use.

3-5-2. STOL RUNWAYS

Use STOL runways as follows:

a. A designated STOL runway may be assigned only when requested by the pilot or as specified in a letter of agreement with an aircraft operator.

b. Issue the measured STOL runway length if the pilot requests it.

3-5-3. TAILWIND COMPONENTS

When authorizing use of runways and a tailwind component exists, always state both wind direction and velocity.

NOTE-

The wind may be described as "calm" when appropriate. REFERENCE-

FAAO JO 7110.65, Para 2–6–3, Reporting Weather Conditions

3-6-1. EQUIPMENT USAGE

a. The operational status of ASDE systems must be determined during the relief briefing, or as soon as possible after assuming responsibility for the associated position.

b. Use ASDE systems to augment visual observation of aircraft landing or departing, and aircraft or vehicular movements on runways and taxiways, or other parts of the movement area.

1. ASDE systems with safety logic must be operated continuously.

2. ASDE systems without safety logic must be operated:

(a) Continuously between sunset and sunrise.

(b) When visibility is less than the most distant point in the active movement area, or

(c) When, in your judgment, its use will assist you in the performance of your duties at any time.

3–6–2. IDENTIFICATION

a. To identify an observed target/track on an ASDE system display, correlate its position with one or more of the following:

1. Pilot/vehicle operator position report.

2. Controller's visual observation.

3. An identified target observed on the ASR or CTRD.

b. An observed target/track on an ASDE system display may be identified as a false target by visual observation. If the area containing a suspected false target is not visible from the tower, an airport operations vehicle or pilots of aircraft operating in the area may be used to conduct the visual observation.

c. After positive verification that a target is false, through pilot/vehicle operator position report or controller visual observation, the track may be temporarily dropped, which will remove the target from the display and safety logic processing. A notation must be made to FAA Form 7230–4, Daily Record of Facility Operation, when a track is temporarily dropped.

3-6-3. INFORMATION USAGE

a. ASDE system derived information may be used to:

1. Formulate clearances and control instructions to aircraft and vehicles on the movement area.

REFERENCE-

FAA Order JO 7210.3, Para 3-6-2, ATC Surveillance Source Use.

2. Position aircraft and vehicles using the movement area.

3. Determine the exact location of aircraft and vehicles, or spatial relationship to other aircraft/ vehicles on the movement area.

4. Monitor compliance with control instructions by aircraft and vehicles on taxiways and runways.

5. Confirm pilot reported positions.

6. Provide directional taxi information, as appropriate.

PHRASEOLOGY-

TURN (left/right) ON THE TAXIWAY/RUNWAY YOU ARE APPROACHING.

b. Do not provide specific navigational guidance (exact headings to be followed) unless an emergency exists or by mutual agreement with the pilot.

NOTE-

It remains the pilot's responsibility to navigate visually via routes to the clearance limit specified by the controller and to avoid other parked or taxiing aircraft, vehicles, or persons in the movement area.

c. Do not allow an aircraft to begin departure roll or cross the landing threshold whenever there is an unidentified target/track displayed on the runway.

3-6-4. SAFETY LOGIC ALERT RESPONSES

When the system generates an alert, the controller must immediately assess the situation visually and as presented on the ASDE system display, then take appropriate action as follows:

a. When an arrival aircraft (still airborne, prior to the landing threshold) activates a warning alert, the controller must issue go-around instructions. (Exception: Alerts involving known formation flights, as they cross the landing threshold, may be disregarded if all other factors are acceptable.)

NOTE-

The intent of this paragraph is that an aircraft does not land on the runway, on that approach, when the safety logic system has generated a warning alert. A side-step maneuver or circle to land on another runway satisfies this requirement.

REFERENCE-

FAA Order JO 7110.65, Para 3–8–1, Sequence/Spacing Application. FAA Order JO 7110.65, Para 3–9–6, Same Runway Separation. FAA Order JO 7110.65, Para 3–10–3, Same Runway Separation. P/CG Term– Go Around.

b. When two arrival aircraft, or an arrival aircraft and a departing aircraft activate an alert, the controller will issue go-around instructions or take appropriate action to ensure intersecting runway separation is maintained.

REFERENCE-

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

c. For other safety logic system alerts, issue instructions/clearances based on good judgment and evaluation of the situation at hand.

3-6-5. RADAR-ONLY MODE

Radar–only mode is an enhancement of the ASDE–X and ASSC systems which allows the system to stay operational with safety logic processing, despite a critical fault in the Multilateration (MLAT) subsystem. The system stays in full core alert status under radar–only mode without data block capability. 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 Air Traffic 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 2–6–2 PIREP Solicitation and Dissemination 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.

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-

FAA Order JO 7110.65, Para 3–1–6, Traffic Information. AC150/5300–13, Airport Design (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. 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.

f. 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.

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

h. 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.

i. 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.

j. 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.

k. 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.

I. 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.

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

PHRASEOLOGY-

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

NOTE-

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

o. Do not use the term "full length" when the runway length available for departure has been temporarily shortened. On permanently shortened runways, do not use the term "full length" until the Chart Supplement 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.

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

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

2. The addition of "shortened" must be included in the line up and wait clearance until the Chart Supplement 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.*

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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, g, and h. 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.

REFERENCE-

FAA Order JO 7210.3, Para 2–1–15, Authorization for Separation Services by Towers. FAA Order JO 7210.3, Para 10–5–3, Functional Use of Certified Tower radar Displays.

NOTE-

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

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

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

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



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



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





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

1. Heavy, large, or small behind super -3 minutes.

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

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



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

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

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

3. Small behind B757 – 2 minutes.

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

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

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

k. Separate a small aircraft behind a B757 that has departed or made a low/missed approach by 3 *minutes* when utilizing opposite direction takeoffs or landings from:

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

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

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

PHRASEOLOGY-HOLD FOR WAKE TURBULENCE.

REFERENCE-

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

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

NOTE-

A request for takeoff does not initiate a waiver request.

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

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

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

1. Separate a 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 or a parallel runway separated by lees than 700 feet.

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

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/INTER-SECTING 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 3–9–9).

FIG 3-9-9 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 3-9-10).

REFERENCE-

P/CG Term- Clear of the Runway.





WAKE TURBULENCE APPLICATION

3. Separate aircraft taking off behind a departing or landing aircraft on an intersecting runway if flight paths will cross (See FIG 3–9–11 and FIG 3–9–12):

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 3-9-11 Departure Behind Departure on Intersecting Runway



FIG 3-9-12 Departure Behind Arrival on Intersecting 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.

MAO 50 /110.05, Furu 5-5-4, Minimu, Subpuragraph 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 3-9-13).



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 3-9-14 and FIG 3-9-15).





FIG 3-9-15 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 on 1NM or less from either departure end, apply the provisions of Paragraph 3–9–8, Intersecting Runway/ Intersecting Flight Path Operations, unless the facility is using aids specified in a facility directive, (may include but are not limited to, Arrival/Departure Window (ADW), ASDE–X Virtual Runway Intersection Point (VRIP), cut–off points or automation). (See FIG 3–9–16 and FIG 3–9–17.)

REFERENCE-

FAAO JO 7210.3, Para 10-3-14, Go-Around/Missed Approach

FIG 3-9-16 Intersecting Runway Separation



FIG 3-9-17 Intersecting Runway Separation



WAKE TURBULENCE APPLICATION

c. Separate aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–18):

1. Heavy, large, or small behind super -3 minutes.

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

3. Small behind B757 – 2 *minutes*.



NOTE-

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

d. Separate aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG 3–9–19):

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

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

3. Small behind B757 – 2 minutes.



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

REFERENCE-

FAAO JO 7110.65, Para 5-8-3, Successive or Simultaneous Departures. FAAO JO 7110.65, Para 5-8-5, Departures and Arrivals on Parallel or Nonintersecting Diverging Runways. FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

3-9-10. TAKEOFF CLEARANCE

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

PHRASEOLOGY-

RUNWAY (number), CLEARED FOR TAKEOFF.

EXAMPLE-

"RUNWAY TWO SEVEN, CLEARED FOR TAKEOFF." NOTE-

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

REFERENCE-

FAAO JO 7110.65, Para 4-3-1, Departure Terminology.

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

PHRASEOLOGY-

RUNWAY (number) AT (taxiway designator) CLEARED FOR TAKEOFF.

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

PHRASEOLOGY-

RUNWAY (number), FULL LENGTH, CLEARED FOR TAKEOFF.

EXAMPLE-

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

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

4/27/14

A A-1 A-2 0 T T

FIG 3-9-20

Runway/Taxiway Proximity

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

PHRASEOLOGY-

CROSS RUNWAY (number), RUNWAY (number) CLEARED FOR TAKEOFF.

EXAMPLE-

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



REFERENCE-

FAAO JO 7210.3, Para 10–3–9, Takeoff Clearance. P/CG Term– Clear of the Runway.

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

NOTE-

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

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

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

2. The addition of "shortened" must be included in the takeoff clearance until the Chart Supplement

U.S. is updated to include the change(s) when the runway is permanently shortened.

PHRASEOLOGY-

RUNWAY (number) SHORTENED, CLEARED FOR TAKEOFF.

EXAMPLE-

"Runway Two-Seven shortened, cleared for takeoff."

PHRASEOLOGY-

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

EXAMPLE-

"Runway Two-Seven at Juliet, intersection departure shortened, cleared for takeoff."

REFERENCE-

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

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

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

PHRASEOLOGY-

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

3-9-11. CANCELLATION OF TAKEOFF CLEARANCE

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

NOTE-

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

PHRASEOLOGY-

CANCEL TAKEOFF CLEARANCE (reason).

Section 10. Arrival Procedures and Separation

3-10-1. LANDING INFORMATION

Provide current landing information, as appropriate, to arriving aircraft. Landing information contained in the ATIS broadcast may be omitted if the pilot states the appropriate ATIS code. Runway, wind, and altimeter may be omitted if a pilot uses the phrase "have numbers." Issue landing information by including the following:

NOTE-

Pilot use of "have numbers" does not indicate receipt of the ATIS broadcast.

a. Specific traffic pattern information (may be omitted if the aircraft is to circle the airport to the left).

PHRASEOLOGY-

ENTER LEFT/RIGHT BASE.

STRAIGHT-IN.

MAKE STRAIGHT-IN.

STRAIGHT-IN APPROVED.

RIGHT TRAFFIC.

MAKE RIGHT TRAFFIC.

RIGHT TRAFFIC APPROVED.

CONTINUE.

NOTE-

Additional information should normally be issued with instructions to continue. Example: "continue, report one mile final"; "continue, expect landing clearance two mile final"; etc.

- **b.** Runway in use.
- c. Surface wind.
- d. Altimeter setting.

REFERENCE-

FAAO JO 7110.65, Para 2-7-1, Current Settings.

- e. Any supplementary information.
- f. Clearance to land.

g. Requests for additional position reports. Use prominent geographical fixes which can be easily recognized from the air, preferably those depicted on

sectional charts. This does not preclude the use of the legs of the traffic pattern as reporting points.

NOTE-

At some locations, VFR checkpoints are depicted on sectional aeronautical and terminal area charts. In selecting geographical fixes, depicted VFR checkpoints are preferred unless the pilot exhibits a familiarity with the local area.

h. Ceiling and visibility if either is below basic VFR minima.

i. Low level wind shear or microburst advisories when available.

REFERENCE-

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

j. 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 3-3-5, Braking Action Advisories.

k. If the pilot does not indicate the appropriate ATIS code, and when a runway has been shortened, controllers must ensure that pilots receive the runway number combined with a shortened announcement for all arriving aircraft.

3-10-2. FORWARDING APPROACH INFORMATION BY NONAPPROACH CONTROL FACILITIES

a. Forward the following, as appropriate, to the control facility having IFR jurisdiction in your area. You may eliminate those items that, because of local conditions or situations, are fully covered in a letter of agreement or a facility directive.

1. When you clear an arriving aircraft for a visual approach.

REFERENCE-

FAAO JO 7110.65, Para 7-4-1, Visual Approach.

- 2. Aircraft arrival time.
- 3. Cancellation of IFR flight plan.

4. Information on a missed approach, unreported, or overdue aircraft.

- 5. Runway in use.
- **6.** Weather as required.

REFERENCE-

FAAO JO 7110.65, Para 2-6-3, Reporting Weather Conditions,

b. When the weather is below 1,000 feet or 3 miles or the highest circling minimums, whichever is greater, issue current weather to aircraft executing an instrument approach if it changes from that on the ATIS or that previously forwarded to the center/ approach control.

3-10-3. SAME RUNWAY SEPARATION

a. Separate an arriving aircraft from another aircraft using the same runway by ensuring that the arriving aircraft does not cross the landing threshold until one of the following conditions exists or unless authorized in para 3–10–10, Altitude Restricted Low Approach.

1. The other aircraft has landed and is clear of the runway. (See FIG 3–10–1.) Between sunrise and sunset, if you can determine distances by reference to suitable landmarks and the other aircraft has landed, it need not be clear of the runway if the following minimum distance from the landing threshold exists:

REFERENCE-

P/CG Term- Clear of the Runway.



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

FIG 3-10-2 Same Runway Separation



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

FIG 3-10-3 Same Runway Separation



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

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

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

(c) When either is a category III aircraft-6,000 feet. (See FIG 3-10-5.) listed in the current LAHSO directive, whose Available Landing Distance (ALD) does not exceed the landing distance requirement for the runway condition.

PHRASEOLOGY-

HOLD SHORT OF RUNWAY (runway number), (traffic, type aircraft or other information).

NOTE-

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

3. Issue traffic information to both aircraft involved and obtain an acknowledgment from each. Request a read back of hold short instructions when they are not received from the pilot of the restricted aircraft.

EXAMPLE-

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

(When pilot of restricted aircraft responds with only acknowledgment):

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

"Read back hold short instructions."

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

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

4. Issue the measured distance from the landing threshold to the hold short point rounded "down" to the nearest 50–foot increment if requested by either aircraft.

EXAMPLE-

"Five thousand fifty feet available."

5. The conditions in subparas b2, 3, and 4 must be met in sufficient time for the pilots to take other action, if desired, and no later than the time landing clearance is issued.

6. Land and Hold Short runways must be free of any contamination as described in the current

LAHSO directive, with no reports that braking action is less than good.

7. There is no tailwind for the landing aircraft restricted to hold short of the intersection. The wind may be described as "calm" when appropriate.

REFERENCE-

FAAO JO 7110.65, Para 2-6-3, Reporting Weather Conditions

8. The aircraft required landing distances are listed in the current LAHSO directive.

9. STOL aircraft operations are in accordance with a letter of agreement with the aircraft operator/pilot or the pilot confirms that it is a STOL aircraft.

WAKE TURBULENCE APPLICATION

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

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

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

3. Small behind B757 – 2 minutes.

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

REFERENCE-

AC 90-23, Aircraft Wake Turbulence, Para 11, Pilot Responsibility.





1. All aircraft landing on a crossing runway behind a departing super or heavy, or a small aircraft landing on a crossing runway behind a departing B757, if the arrival flight path will cross the takeoff path behind the departing aircraft rotation point. (See FIG 3–10–11.)



EXAMPLE-

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

2. All VFR aircraft landing on a crossing runway behind an arriving super or heavy, and VFR small aircraft landing on a crossing runway behind a B757, if the arrival flight paths will cross. (See FIG 3–10–12.)

FIG 3-10-12 Intersecting Runway Separation



EXAMPLE-

"Runway niner cleared to land. Caution wake turbulence, Boeing Seven Fifty Seven landing runway three six." REFERENCE-

FAAO JO 7110.65, Para 7-4-4, Approaches to Multiple Runways.

3-10-5. LANDING CLEARANCE

a. When issuing a clearance to land, first state the runway number followed by the landing clearance. If the landing runway is changed, controllers must preface the landing clearance with "Change to runway."

PHRASEOLOGY-

RUNWAY (number) CLEARED TO LAND.

Or

CHANGE TO RUNWAY (number) CLEARED TO LAND.

b. Procedures.

1. Facilities without a safety logic system or facilities with the safety logic system inoperative or in the limited configuration must not clear an aircraft for a full-stop, touch-and-go, stop-and-go, option, or unrestricted low approach when a departing aircraft has been instructed to line up and wait or is holding in position on the same runway. The landing clearance may be issued once the aircraft in position has started takeoff roll.

2. Facilities using safety logic in the full core alert runway configuration may issue a landing

Chapter 4. IFR

Section 1. NAVAID Use Limitations

4–1–1. ALTITUDE AND DISTANCE LIMITATIONS

When specifying a route other than an established airway or route, do not exceed the limitations in the table on any portion of the route which lies within controlled airspace. (For altitude and distance limitations, see TBL 4–1–1, TBL 4–1–2, and TBL 4–1–3) (For correct application of altitude and distance limitations see FIG 4–1–1 and FIG 4–1–2.)

REFERENCE-

FAAO JO 7110.65, Para 4–1–5, Fix Use. FAAO JO 7110.65, Para 5–6–2, Methods.

> TBL 4-1-1 VOR/VORTAC/TACAN NAVAIDs Normal Usable Altitudes and Radius Distances

Class	Altitude	Distance (miles)
Т	12,000 and below	25
L	Below 18,000	40
Н	Below 14,500	40
Н	14,500 – 17,999	100
Н	18,000 – FL 450	130
Н	Above FL 450	100

TBL 4–1–2 **L/MF Radio Beacon (RBN)** Usable Radius Distances for All Altitudes

Class	Power (watts)	Distance (miles)
CL	Under 25	15
MH	Under 50	25
Н	50 – 1,999	50
HH	2,000 or more	75

TBL 4-1-3 **ILS** Usable Height and Distance*

Height (feet) above transmitter	Distance (miles from transmitter)			
4,500	10 (for glideslope)			
4,500	18 (for localizer)			
*Use the current flight check height/altitude limitations if different from the above minima.				

FIG 4-1-1 Application of Altitude and Distance Limitations [Application 1]



FIG 4–1–2 Application of Altitude and Distance Limitations [Application 2]



4-1-2. EXCEPTIONS

Altitude and distance limitations need not be applied when any of the following conditions are met:

a. Routing is initiated by ATC or requested by the pilot and radar monitoring is provided.

EXCEPTION-

GNSS equipped aircraft /G, /L, /S, and /V not on a random impromptu route.

NOTE-

1. Except for GNSS-equipped aircraft /G, /L, /S, and /V, not on a random impromptu route, Paragraph 5-5-1, Application, requires radar separation be provided to RNAV aircraft operating at and below FL450 on Q routes or random RNAV routes, excluding oceanic airspace.

2. When a clearance is issued beyond the altitude and/or distance limitations of a NAVAID, in addition to being responsible for maintaining separation from other aircraft and airspace, the controller is responsible for providing aircraft with information and advice related to significant deviations from the expected flight path.

REFERENCE-

FAAO JO 7110.65, Para 2-1-3, Procedural Preference.
FAAO JO 7110.65, Para 4-4-2, Route Structure Transitions.
FAAO JO 7110.65, Para 5-1-10, Deviation Advisories.
FAAO JO 7110.65, Para 5-5-1, Application.
FAAO JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes.
AIM, Para 5-1-8c, Direct Flights
AIM, Para 5-1-8d, Area Navigation (RNAV)
P/CG Term - Global Navigation Satellite System (GNSS)[ICAO].

b. Operational necessity requires and approval has been obtained from the Frequency Management and Flight Inspection Offices to exceed them.

c. Requested routing is via an MTR.

REFERENCE-FAAO JO 7110.65, Para 5–6–2, Methods.

4-1-3. CROSSING ALTITUDE

Use an altitude consistent with the limitations of the aid when clearing an aircraft to cross or hold at a fix.

REFERENCE-FAAO JO 7110.65, Para 5–6–2, Methods.

4-1-4. VFR-ON-TOP

Use a route not meeting service volume limitations only if an aircraft requests to operate "VFR-on-top" on this route.

NOTE-

Aircraft equipped with TACAN only are expected to:

1. Define route of flight between TACAN or VORTAC NAVAIDs in the same manner as VOR-equipped aircraft.

2. Except in Class A airspace, submit requests for "VFR-on-top" flight where insufficient TACAN or VORTAC NAVAIDs exist to define the route.

REFERENCE-FAAO JO 7110.65, Para 5–6–2, Methods.

4–1–5. FIX USE

Request aircraft position reports only over fixes shown on charts used for the altitude being flown, except as follows:

NOTE-

Waypoints filed in random RNAV routes automatically become compulsory reporting points for the flight unless otherwise advised by ATC.

a. Unless the pilot requests otherwise, use only those fixes shown on high altitude en route charts, high altitude instrument approach procedures charts, and SID charts when clearing military turbojet single-piloted aircraft.

b. Except for military single-piloted turbojet aircraft, unpublished fixes may be used if the name of the NAVAID and, if appropriate, the radial/course/ azimuth and frequency/channel are given to the pilot. An unpublished fix is defined as one approved and planned for publication which is not yet depicted on the charts or one which is used in accord with the following:

REFERENCE-

FAAO 8260.3C, United States Standard for Terminal Instrument Procedures (TERPS), Chapter 17, Basic Holding Criteria..

1. Unpublished fixes are formed by the en route radial and either a DME distance from the same NAVAID or an intersecting radial from an off-route VOR/VORTAC/TACAN. DME must be used in lieu of off-route radials, whenever possible.

2. Except where known signal coverage restrictions exist, an unpublished fix may be used for ATC purposes if its location does not exceed NAVAID altitude and distance limitation, and when off-route radials are used, the angle of divergence meets the criteria prescribed below.

NOTE-

Unpublished fixes should not negate the normal use of published intersections. Frequent routine use of an unpublished fix would justify establishing a fix. **REFERENCE-**

FAAO JO 7110.65, Para 4–1–1, Altitude and Distance Limitations.

3. Do not hold aircraft at unpublished fixes below the lowest assignable altitude dictated by terrain clearance for the appropriate holding pattern airspace area (template) regardless of the MEA for the route being flown.

4. When the unpublished fix is located on an off-route radial and the radial providing course guidance, it must be used consistent with the following divergence angles:

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.

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.

4. When a SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or a Radar Vector SID; or a SID is constructed with a Radar Vector segment and contains published crossing restrictions after the vector segment, instruct aircraft to "MAINTAIN (altitude)."

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.

5. Use one of the following when the SID contains published crossing restrictions:

(a) Instruct aircraft to "Climb via SID."

(b) Instruct the aircraft to "Climb via SID except maintain (altitude)" when a top altitude is not published or when it is necessary to issue an interim altitude.

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-

1. Use of "Climb via SID Except Maintain" to emphasize a published procedural constraint is an inappropriate use of this phraseology.

2. 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.

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." If required, add any additional instructions or information, including requested altitude if different than assigned.

e. Use one of the following when the SID contains published crossing restrictions:

1. Instruct aircraft to "Climb via SID."

2. Instruct aircraft to "Climb via SID except maintain (altitude)" when a top altitude is not published or when it is necessary to issue an interim altitude.

NOTE-

Use of "Climb via SID Except Maintain" to emphasize a published procedural constraint is an inappropriate use of this phraseology.

f. Instruct aircraft to MAINTAIN (altitude) when:

1. No SID is assigned.

2. A SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or is a Radar Vector SID.

3. A SID is constructed with a Radar Vector segment and contains published crossing restrictions after the vector segment.

PHRASEOLOGY-

CLEARED TO (destination) AIRPORT;

and as appropriate,

(SID name and number) DEPARTURE, THEN AS FILED.

When the SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or a Radar Vector SID; or is a SID with a radar vector segment and contains published crossing restrictions after the vector segment.

MAINTAIN (altitude); (additional instructions or information).

Or when a SID contains published crossing restrictions,

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

g. 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.

2. Specify the assigned altitude to maintain, or Climb Via SID, or Climb Via SID except maintain (altitude), as appropriate.

PHRASEOLOGY-

CLEARED TO (destination) AIRPORT.

Or when the SID does not contain published crossing restrictions and/ or is a SID with a Radar Vector segment or a Radar Vector SID

(SID name and number) DEPARTURE,

(transition name) TRANSITION; THEN, AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion). MAINTAIN (altitude);

Or when the SID contains published crossing restrictions,

CLIMB VIA SID

CLIMB VIA SID EXCEPT MAINTAIN (altitude). 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."

h. 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."

i. 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.

discretion is permissible. At any other time it is practicable, authorize climb/descent at pilot's discretion.

PHRASEOLOGY-

CLIMB/DESCEND AT PILOT'S DISCRETION.

EXAMPLE-

"United Four Seventeen, descend and maintain six thousand."

NOTE-

The pilot is expected to commence descent upon receipt of the clearance and to descend at the suggested rates specified in the AIM, para 4-4-10, Adherence to Clearance, until reaching the assigned altitude of 6,000 feet.

EXAMPLE-

"United Four Seventeen, descend at pilot's discretion, maintain six thousand."

NOTE-

The pilot is authorized to conduct descent within the context of the term "at pilot's discretion" as described in the AIM.

EXAMPLE-

"United Four Seventeen cross Lakeview V–O–R at or above flight level two zero zero, descend and maintain six thousand."

NOTE-

The pilot is authorized to conduct descent "at pilot's discretion" until reaching Lakeview VOR. The pilot must comply with the clearance provision to cross the Lakeview VOR at or above FL 200, and after passing Lakeview VOR, the pilot is expected to descend at the rates specified in the AIM until reaching the assigned altitude of 6,000 feet.

EXAMPLE-

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

NOTE-

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

EXAMPLE-

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

NOTE-

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

NOTE-

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

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

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

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

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

NOTE-

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

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

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

EXAMPLE-

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

NOTE-

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

g. Altitude assignments involving more than one altitude.

PHRASEOLOGY-

MAINTAIN BLOCK (altitude) THROUGH (altitude).

h. Instructions to vertically navigate on a STAR/SID with published crossing restrictions.

PHRASEOLOGY-

DESCEND VIA (STAR name and number).

TERMINAL: DESCEND VIA (STAR name and number and runway number).

CLIMB VIA (SID name and number).

EXAMPLE-

"Descend via the Eagul Five arrival."

"Cross Gramm at or above flight level one eight zero, then descend via the Riivr Two arrival."

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

"Climb via the Dawgs Four Departure."

NOTE-

When cleared for STARs that contain published speed restrictions, the pilot must comply with those speed restrictions independent of any descend via clearance. Clearance to "descend via" authorizes pilots:

1. To descend at pilot discretion to meet published restrictions and laterally navigate on a STAR. Pilots navigating on a STAR must maintain the last assigned altitude until receiving clearance to descend via. Once departing an altitude the pilot may not return to that altitude without an ATC clearance.

2. When cleared to a waypoint depicted on a STAR, to descend from a previously assigned altitude at pilot's discretion to the altitude depicted for that waypoint. ATC assigned altitudes must ensure obstacle clearance.

3. Once established on the depicted arrival, to descend and to meet all published or assigned altitude and/or speed restrictions. Where speed restrictions are published at the waypoint/fix pilots will begin slowing to comply with the restrictions prior to reaching the waypoint/fix.

NOTE-

When cleared for SIDs that contain published speed restrictions, the pilot must comply with those speed restrictions independent of any "climb via" clearance. Clearance to "climb via" authorizes pilots:

1. When used in the IFR departure clearance, in a PDC, DCL or when subsequently cleared after departure to a waypoint depicted on a SID, to join a procedure after departure or resume a procedure.

2. When vertical navigation is interrupted and an altitude is assigned to maintain which is not contained on the published procedure, to climb from that previously-assigned altitude at pilot's discretion to the altitude depicted for the next waypoint. ATC must ensure obstacle clearance 3. Once established on the depicted departure, to climb and to meet all published or assigned altitude and speed restrictions.

REFERENCE-

FAAO JO 7110.65, Para 4-4-2, Route Structure Transitions FAAO JO 7110.65, Para 4-5-6, Minimum En Route Altitudes FAAO JO 7110.65, Para 5-5-9, Separation From Obstructions PCG, Climb Via, Descend Via.

NOTE-

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

EXAMPLE-

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

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

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

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

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

REFERENCE-

AIM, Para 5-2-8, Instrument Departure Procedures (DP) – Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID)

PCG, Top Altitude, Bottom Altitude

AIM, Para 5-4-1, Standard Terminal Arrival (STAR) Procedures.

1. Assign an altitude to cross the waypoint/fix, if no altitude is depicted at the waypoint/fix, for aircraft on a direct routing to a STAR or SID waypoint/fix.

EXAMPLE-

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

NOTE-

In Example 1 the aircraft will maintain FL200 or higher until reaching Denis. The pilot will then comply with the Mmell One arrival lateral path and published speed restrictions and will descend at pilot discretion to comply with published altitude restrictions. The aircraft may begin slowing prior to Denis to comply with any published speed restrictions at that waypoint.

EXAMPLE-

2. "Proceed direct Rockr, cross Rockr at or above one-zero thousand, climb via the Bizee Two departure."

NOTE-

In Example 2 the aircraft will join the Bizee Two departure at Rockr and will then comply with departure published lateral path, published speed and altitude restrictions.

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

NOTE-

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

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

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

NOTE-

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

PHRASEOLOGY-

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

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

EXAMPLE-

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

NOTE-

In Example 1, the aircraft will comply with the assigned SID departure lateral path and any published speed and

altitude restrictions and climb so as to cross Mkala at or above 7,000; remainder of the departure must be flown as published.

EXAMPLE-

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

NOTE-

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

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

PHRASEOLOGY-CLIMB VIA SID.

CLIMB VIA SID except maintain (altitude).

EXAMPLE-

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

NOTE-

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

EXAMPLE-

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

NOTE-

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

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

PHRASEOLOGY-

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

EXAMPLE-

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

NOTE-

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

REFERENCE-

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

PHRASEOLOGY-

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

EXAMPLE-

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

NOTE-

1. Considering the principle that the last ATC clearance issued has precedence over the previous, the phraseology "maintain (altitude)" alone cancels previously issued altitude restrictions, including SID/STAR altitude restrictions unless they are restated or modified, and authorizes an unrestricted climb or descent. Speed restrictions remain in effect unless the controller explicitly cancels the speed restrictions.

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

REFERENCE-

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

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

NOTE-

1. 14 CFR Section 91.123 states that a pilot is not allowed

to deviate from an ATC clearance "that has been obtained...unless an amended clearance is obtained" (except when an emergency exists).

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

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

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

REFERENCE-

FAAO JO 7110.65, Para 10-1-3, Providing Assistance.

4-5-8. ANTICIPATED ALTITUDE CHANGES

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

PHRASEOLOGY-

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

or

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

If required,

AT (time, fix, or altitude).

REFERENCE-

FAAO JO 7110.65, Para 2-2-6, IFR Flight Progress Data.

4–5–9. ALTITUDE CONFIRMATION– NONRADAR

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

NOTE-

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

1. The pilot states the assigned altitude, or

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

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

Section 6. Holding Aircraft

4-6-1. CLEARANCE TO HOLDING FIX

Consider operational factors such as length of delay, holding airspace limitations, navigational aids, altitude, meteorological conditions when necessary to clear an aircraft to a fix other than the destination airport. Issue the following:

a. Clearance limit (if any part of the route beyond a clearance limit differs from the last routing cleared, issue the route the pilot can expect beyond the clearance limit).

PHRASEOLOGY-

EXPECT FURTHER CLEARANCE VIA (routing).

EXAMPLE-

"Expect further clearance via direct Stillwater V–O–R, Victor Two Twenty-Six Snapy intersection, direct Newark."

b. Holding instructions.

1. Holding instructions may be eliminated when you inform the pilot that no delay is expected.

2. When the assigned procedure or route being flown includes a charted pattern, you may omit all holding instructions except the charted holding direction and the statement "as published." Always issue complete holding instructions when the pilot requests them.

NOTE-

The most generally used holding patterns are depicted on U.S. Government or commercially produced low/high altitude en route, area, and STAR Charts.

PHRASEOLOGY-

CLEARED TO (fix), HOLD (direction), AS PUBLISHED,

or

CLEARED TO (fix), NO DELAY EXPECTED.

c. EFC. Do not specify this item if no delay is expected.

1. When additional holding is expected at any other fix in your facility's area, state the fix and your best estimate of the additional delay. When more than one fix is involved, state the total additional en route delay (omit specific fixes).

NOTE-

Additional delay information is not used to determine pilot action in the event of two-way communications failure. Pilots are expected to predicate their actions solely on the provisions of 14 CFR Section 91.185.

PHRASEOLOGY-EXPECT FURTHER CLEARANCE (time),

and if required,

ANTICIPATE ADDITIONAL (time in minutes/hours) MINUTE/HOUR DELAY AT (fix),

or

ANTICIPATE ADDITIONAL (time in minutes/hours) MINUTE/HOUR EN ROUTE DELAY.

EXAMPLE-

1. *"Expect further clearance one niner two zero, anticipate additional three zero minute delay at Sweet."*

2. *"Expect further clearance one five one zero, anticipate additional three zero minute en route delay."*

2. When additional holding is expected in an approach control area, state the total additional terminal delay.

PHRASEOLOGY-EXPECT FURTHER CLEARANCE (time),

and if required,

ANTICIPATE ADDITIONAL (time in minutes/hours) MINUTE/HOUR TERMINAL DELAY.

3. *TERMINAL*. When terminal delays exist or are expected, inform the appropriate center or approach control facility so that the information can be forwarded to arrival aircraft.

4. When delay is expected, issue items in subparas a and b at least 5 minutes before the aircraft is estimated to reach the clearance limit. If the traffic situation requires holding an aircraft that is less than 5 minutes from the holding fix, issue these items immediately.

NOTE-

1. The AIM indicates that pilots should start speed reduction when 3 minutes or less from the holding fix. The additional 2 minutes contained in the 5-minute requirement are necessary to compensate for different pilot/controller ETAS at the holding fix, minor differences

in clock times, and provision for sufficient planning and reaction times.

2. When holding is necessary, the phrase "delay indefinite" should be used when an accurate estimate of the delay time and the reason for the delay cannot immediately be determined; i.e., disabled aircraft on the runway, terminal or center sector saturation, weather below landing minimums, etc. In any event, every attempt should be made to provide the pilot with the best possible estimate of his/her delay time and the reason for the delay. Controllers/supervisors should consult, as appropriate, with personnel (other sectors, weather forecasters, the airport management, other facilities, etc.) who can best provide this information.

PHRASEOLOGY-

DELAY INDEFINITE, (reason if known), EXPECT FURTHER CLEARANCE (time). (After determining the reason for the delay, advise the pilot as soon as possible.)

EXAMPLE-

"Cleared to Drewe, hold west, as published, expect further clearance via direct Sidney V–O–R one three one five, anticipate additional two zero minute delay at Woody."

"Cleared to Aston, hold west on Victor two twenty-five, seven mile leg, left turns, expect further clearance one niner two zero, anticipate additional one five minute terminal delay."

"Cleared to Wayne, no delay expected."

"Cleared to Wally, hold north, as published, delay indefinite, snow removal in progress, expect further clearance one one three zero."

4-6-2. CLEARANCE BEYOND FIX

a. If no delay is expected, issue a clearance beyond the clearance limit as soon as possible and, whenever possible, at least 5 minutes before the aircraft reaches the fix.

b. Include the following items when issuing clearance beyond a clearance limit:

1. Clearance limit or approach clearance.

2. Route of flight. Specify one of the following:

(a) Complete details of the route (airway, route, course, fix(es), azimuth course, heading, arc, or vector.)

(b) The phrase "via last routing cleared." Use this phrase only when the most recently issued

routing to the new clearance limit is valid and verbiage will be reduced.

PHRASEOLOGY-

VIA LAST ROUTING CLEARED.

3. Assigned altitude if different from present altitude.

NOTE-

Except in the event of a two-way communications failure, when a clearance beyond a fix has not been received, pilots are expected to hold as depicted on U.S. Government or commercially produced (meeting FAA requirements) low/high altitude en route and area or STAR charts. If no holding pattern is charted and holding instructions have not been issued, pilots should ask ATC for holding instructions prior to reaching the fix. If a pilot is unable to obtain holding instructions prior to reaching the fix, the pilot is expected to hold in a standard pattern on the course on which the aircraft approached the fix and request further clearance as soon as possible.

4-6-3. DELAYS

a. Advise your supervisor or flow controller as soon as possible when you delay or expect to delay aircraft.

b. When arrival delays reach or are anticipated to reach 30 minutes, take the following action:

1. *EN ROUTE.* The center responsible for transferring control to an approach control facility or, for a nonapproach control destination, the center in whose area the aircraft will land must issue total delay information as soon as possible after the aircraft enters the center's area. Whenever possible, the delay information must be issued by the first center controller to communicate with the aircraft.

REFERENCE-

FAA07110.65, Para 5-14-9, ERAM Computer Entry of Hold Information

2. *TERMINAL*. When tower en route control service is being provided, the approach control facility whose area contains the destination airport must issue total delay information as soon as possible after the aircraft enters its approach control area. Whenever possible, the delay information must be issued by the first terminal controller to communicate with the aircraft.

3. Unless a pilot requests delay information, the actions specified in subparas 1 and 2 above may be omitted when total delay information is available to pilots via ATIS.

PHRASEOLOGY-

(Airport) ARRIVAL DELAYS (time in minutes/hours).

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 ILS OM or the fix used in lieu of the ILS OM or the fix used in lieu of the OM and the airport. *USAF*.

REFERENCE-

FAAO 8260.3C, United States Standard for Terminal Instrument Procedures (TERPS), Chapter 17, Basic Holding Criteria.

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 h2(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

Chapter 5. Radar

Section 1. General

5–1–1. PRESENTATION AND EQUIPMENT PERFORMANCE

Provide radar service only if you are personally satisfied that the radar presentation and equipment performance is adequate for the service being provided.

NOTE-

The provision of radar service is not limited to the distance and altitude parameters obtained during the commissioning flight check.

5-1-2. ALIGNMENT ACCURACY CHECK

TERMINAL

a. At locations not equipped with Digital Terminal Automation Systems (DTAS), during relief briefing, or as soon as possible after assuming responsibility for a control position, check the operating equipment for alignment accuracy and display acceptability. Recheck periodically throughout the watch.

REFERENCE-

FAA Order JO 7210.3, Chapter 3, Chapter 8, Chapter 9, Chapter 10, and Chapter 11.

Comparable Military Directives.

1. Check the alignment of the radar video display by assuring that the video/digital map or overlay is properly aligned with a permanent target of known range and azimuth on the radar display. Where possible, check one permanent target per quadrant.

2. Accuracy of the radar video display must be verified for digitized radar systems by using the moving target indicator (MTI) reflectors, fixed location beacon transponders (Parrots), beacon real-time quality control (RTQC) symbols or calibration performance monitor equipment (CPME) beacon targets.

REFERENCE-

FAA Order JO 7210.3, Para 3-7-1, Tolerance for Radar Fix Accuracy.

3. Digital Terminal Automation Systems (DTAS) conduct continuous self-monitoring of alignment accuracy; therefore, controller alignment checks are not required.

5-1-3. ATC SURVEILLANCE SOURCE USE

Use approved ATC Surveillance Sources.

REFERENCE-

FAAO JO 7110.65, Para 5–1–4, Beacon Range Accuracy. FAAO JO 7110.65, Para 5–2–16, Inoperative or Malfunctioning Interrogator.

a. Secondary radar may be used as the sole display source as follows:

1. In Class A airspace.

REFERENCE-FAAO JO 7110.65, Para 5–2–17, Failed Transponder in Class A Airspace.

14 CFR Section 91.135, Operations in Class A Airspace.

2. Outside Class A airspace, or where mix of Class A airspace/non-Class A airspace exists, only when:

(a) Additional coverage is provided by secondary radar beyond that of the primary radar, or

(b) The primary radar is temporarily unusable or out of service. Advise pilots when these conditions exist, or

PHRASEOLOGY-

PRIMARY RADAR UNAVAILABLE (describe location). RADAR SERVICES AVAILABLE ON TRANSPONDER EQUIPPED AIRCRAFT ONLY.

NOTE-

1. Advisory may be omitted when provided on ATIS and pilot indicates having ATIS information.

2. This provision is to authorize secondary radar only operations where there is no primary radar available and the condition is temporary.

(c) A secondary radar system is the only source of radar data for the area of service. When the system is used for separation, beacon range accuracy is assured, as provided in para 5-1-4, Beacon Range Accuracy. *TERMINAL*. Advise pilots when these conditions exist.

NOTE-

Advisory may be omitted when provided on ATIS or by other appropriate notice to pilots.

b. *TERMINAL*. Do not use secondary radar only to conduct surveillance (ASR) final approaches unless an emergency exists and the pilot concurs.

c. All procedures and requirements relating to ATC services using secondary radar targets apply to ATC services provided to targets derived from ADS-B and WAM.

NOTE-

Targets derived from ADS-B and/or WAM cannot be used to provide 3NM separation in the EAS. 3NM targets are not derived from ADS-B and/or WAM within the EAS.

REFERENCE-

JO 7110.65, Para4-1-2, Exceptions. JO 7110.65, Para 4-4-2, Route Structure Transitions JO 7110.65, Para 5-5-1, Application JO 7110.65, Para 6-5-4, Minima Along Other Than Established Airways or Routes JO 7110.65, Chapter 6, Nonradar JO 7110.65, Para 5-5-4, Minima JO 7210.3 3-6-2 ATC Surveillance Source Use

5-1-4. BEACON RANGE ACCURACY

a. You may use beacon targets for separation purposes if beacon range accuracy is verified by one of the following methods:

NOTE-

1. The check for verification of beacon range accuracy accomplished by correlation of beacon and primary radar targets of the same aircraft is not a check of display accuracy. Therefore, it is not necessary that it be done using the same display with which separation is being provided, nor the same targets being separated.

2. Narrowband and Full Digital Automation Systems: Technical operations personnel verify beacon range accuracy for automated narrowband display equipment and Full Digital Terminal Automation Systems. Consequently, further verification by the controller is unnecessary.

1. Correlate beacon and primary targets of the same aircraft (not necessarily the one being provided separation) to assure that they coincide.

2. When beacon and primary targets of the same aircraft do not coincide, correlate them to assure that any beacon displacement agrees with the specified distance and direction for that particular radar system.

3. Refer to beacon range monitoring equipment where so installed.

b. If beacon range accuracy cannot be verified, you may use beacon targets only for traffic information.

REFERENCE-

FAAO JO 7110.65, Para 5-1-3, Radar Use.

5–1–5. ELECTRONIC ATTACK (EA) ACTIVITY

a. Refer all EA activity requests to the appropriate center supervisor.

REFERENCE-

FAAO JO 7610.4, Chapter 2, Section 7, Electronic Attack (EA) and Testing Coordination.

NOTE-

EA activity can subsequently result in a request to apply EA videos to the radar system which may necessitate the decertification of the narrowband search radar. The Systems Engineer should be consulted concerning the effect of EA on the operational use of the narrowband radar prior to approving/disapproving requests to conduct EA activity.

b. When EA activity interferes with the operational use of radar:

1. *EN ROUTE.* Request the responsible military unit or aircraft, if initial request was received directly from pilot, to suspend the activity.

2. *TERMINAL*. Request suspension of the activity through the ARTCC. If immediate cessation of the activity is required, broadcast the request directly to the EA aircraft on the emergency frequency. Notify the ARTCC of direct broadcast as soon as possible.

c. When previously suspended activity will no longer interfere:

1. *EN ROUTE*. Inform the NORAD unit or aircraft that it may be resumed.

2. *TERMINAL*. Inform the ARTCC or aircraft that it may be resumed. Obtain approval from the ARTCC prior to broadcasting a resume clearance directly to the aircraft.

d. In each stop request, include your facility name, type of EA activity (chaff dispensing-"stream"/"burst" or electronic jamming- "buzzer"), radar band affected and, when feasible, expected duration of suspension.

PHRASEOLOGY-

BIG PHOTO (identification, if known) (name) CENTER/TOWER/APPROACH CONTROL.

To stop EA activity:

STOP STREAM/BURST IN AREA (area name) (degree and distance from facility),
STOP BUZZER ON (frequency band or channel).

To resume EA activity:

RESUME STREAM/BURST,

or

RESUME BUZZER ON (frequency band or channel).

5-1-6. SERVICE LIMITATIONS

a. When radar mapping is not available, limit radar services to:

1. Separating identified aircraft targets.

2. Vectoring aircraft to intercept a PAR final approach course.

3. Providing radar service in areas that ensure no confliction with traffic on airways, other ATC areas of jurisdiction, restricted or prohibited areas, terrain, etc.

b. *EN ROUTE*. When the position symbol associated with the data block falls more than one history behind the actual aircraft target or there is no target symbol displayed, the Mode C information in the data block must not be used for the purpose of determining separation.

c. Report radar malfunctions immediately for corrective action and for dispatch of a Notice to Airmen. Advise adjacent ATC facilities when appropriate.

REFERENCE-

FAAO JO 7110.65, Para 2–1–9, Reporting Essential Flight Information. FAAO JO 7210.3, Chapter 3, Chapter 7, Chapter 10 Section 5, and Chapter 11 Section 2.

5-1-7. ELECTRONIC CURSOR

TERMINAL

a. An electronic cursor may be used to aid in identifying and vectoring an aircraft and to give finer delineation to a video map. Do not use it as a substitute for a video map or map overlay; e.g., to form intersections, airway boundaries, final approach courses, etc.

b. Fixed electronic cursors may be used to form the final approach course for surveillance approaches conducted by military operated mobile radar facilities.

5-1-8. MERGING TARGET PROCEDURES

a. Except while they are established in a holding pattern, apply merging target procedures to all radar identified:

1. Aircraft at 10,000 feet and above.

2. Turbojet aircraft regardless of altitude.

REFERENCE-

P/CG Term- Turbojet Aircraft.

3. Presidential aircraft regardless of altitude.

b. Issue traffic information to those aircraft listed in subpara a whose targets appear likely to merge unless the aircraft are separated by more than the appropriate vertical separation minima.

EXAMPLE-

"Traffic twelve o'clock, seven miles, eastbound, MD-80, at one seven thousand."

"United Sixteen and American Twenty-five, traffic twelve o'clock, one zero miles, opposite direction, eastbound seven twenty seven at flight level three three zero, westbound MD-Eighty at flight level three one zero."

c. When both aircraft in subpara b are in RVSM airspace, and vertically separated by 1,000 feet, if either pilot reports they are unable to maintain RVSM due to turbulence or mountain wave, vector either aircraft to avoid merging with the target of the other aircraft.

EXAMPLE-

"Delta One Twenty Three, fly heading two niner zero, vector for traffic. Traffic twelve o'clock, one zero miles, opposite direction, MD-80 eastbound at flight level three two zero."

d. If the pilot requests, vector his/her aircraft to avoid merging with the target of previously issued traffic.

NOTE-

Aircraft closure rates are so rapid that when applying merging target procedures, controller issuance of traffic must be commenced in ample time for the pilot to decide if a vector is necessary.

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

NOTE-

The phraseology "Unable RVSM due turbulence (or mountain wave)" is only intended for severe turbulence or other weather encounters with altitude deviations of approximately 200 feet or more.

5-1-9. HOLDING PATTERN SURVEILLANCE

Provide radar surveillance of outer fix holding pattern airspace areas, or any portions thereof, shown on your radar scope (displayed on the video map or scribed on the map overlay) whenever aircraft are holding there. Attempt to detect any aircraft that stray outside the area. If you detect an aircraft straying outside the area, assist it to return to the assigned airspace.

5-1-10. DEVIATION ADVISORIES

Inform an aircraft when it is observed in a position and on a track which will obviously cause the aircraft to deviate from its protected airspace area. If necessary, help the aircraft to return to the assigned protected airspace.

NOTE-

1. *RNAV ATS routes have a width of 8 miles and laterally protected airspace of 4 miles on each side of the route centerline*

2. Navigation system performance requirements for operations on RNAV ATS routes require the aircraft system be capable of remaining within 2 miles of the route centerline. Aircraft approaching this limit may be experiencing a navigation system error or failure.

REFERENCE-

FAAO JO 7110.65, Para 4–2–5, Route or Altitude Amendments. FAAO JO 7110.65, Para 7–9–3, Methods. FAAO 7400.2, Para 20-5-3. Lateral Protected Airspace Criteria for

RNAV En Route Segments AC90-100A, U.S. Terminal and En Route Area Navigation (RNAV)

Operations, Para 8a. Navigation System Accuracy

5-1-11. RADAR FIX POSTING

EN ROUTE

A controller is required to manually record at least once the observed or reported time over a fix for each controlled aircraft in their sector of responsibility only when the flight progress recording components of the EAS FDP are not operational.

REFERENCE-

FAAO JO 7210.3, Para 6–1–6, Flight Progress Strip Usage. FAAO JO 7210.3, Para 10–1–8, Flight Progress Strip Usage.

5–1–12. POSITION REPORTING

If necessary, you may request an aircraft to provide an estimate or report over a specific fix. After an aircraft receives the statement "radar contact" from ATC, it discontinues reporting over compulsory reporting points. It resumes normal position reporting when ATC informs it "radar contact lost" or "radar service terminated."

REFERENCE-

P/CG Term- Radar Contact.

a. When required, inform an aircraft of its position with respect to a fix or airway.

PHRASEOLOGY– OVER/PASSING (fix).

(Number of miles) MILES FROM (fix).

(Number of miles) MILES (direction) OF (fix, airway, or location).

CROSSING/JOINING/DEPARTING (airway or route).

INTERCEPTING/CROSSING (name of NAVAID) (specified) RADIAL.

5-1-13. RADAR SERVICE TERMINATION

a. Inform aircraft when radar service is terminated.

PHRASEOLOGY-

RADAR SERVICE TERMINATED (nonradar routing if required).

b. Radar service is automatically terminated and the aircraft needs not be advised of termination when:

NOTE-

1. Termination of radar monitoring when conducting simultaneous ILS approaches is prescribed in Para 5–9–7, Simultaneous Independent Approaches– Dual & Triple.

2. Termination of radar monitoring where PAR equipment is used to monitor approaches is prescribed in para 5–13–3, Monitor Information.

1. An aircraft cancels its IFR flight plan, except within Class B airspace, Class C airspace, TRSA, or where basic radar service is provided.

2. An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.

3. At tower-controlled airports where radar coverage does not exist to within 1/2 mile of the end

of the runway, arriving aircraft must be informed when radar service is terminated.

REFERENCE-

FAAO JO 7210.3, Para 10-5-6, Radar Tolerances.

4. *TERMINAL*. An arriving VFR aircraft receiving radar service to a tower-controlled airport within Class B airspace, Class C airspace, TRSA, or where basic radar service is provided has landed, or to all other airports, is instructed to change to tower or advisory frequency.

5. *TERMINAL*. An aircraft completes a radar approach.

REFERENCE-

FAAO JO 7110.65, Para 7–6–12, Service Provided When Tower is Inoperative.

assigned altitude in more than one stratum or other conditions of flight not compatible with a stratified code assignment.

NOTE-

1. Categories of flight that can be assigned **Code 4000** include certain flight test aircraft, MTR missions, aerial refueling operation requiring descent involving more than one stratum, ALTRVs where continuous monitoring of ATC communications facilities is not required and frequent altitude changes are approved, and other aircraft operating on flight plans requiring special handling by ATC.

2. Military aircraft operating VFR or IFR in restricted/ warning areas or VFR on VR routes will adjust their transponders to reply on **Code 4000** unless another code has been assigned by ATC or coordinated, if possible, with ATC.

c. Assign the following codes to arriving IFR aircraft, except military turbojet aircraft as specified in para 4–7–4, Radio Frequency and Radar Beacon Changes for Military Aircraft:

NOTE-

FL 180 may be used in lieu of FL 240 where the base of Class A airspace and the base of the operating sector are at FL 180, and for inter-facility handoff the receiving sector is also stratified at FL 180.

1. Code 2300 may be assigned for descents while above FL 240.

2. Code 1500 may be assigned for descents into and while within the strata below FL 240, or with prior coordination the specific code utilized by the destination controller, or the code currently assigned when descent clearance is issued.

3. The applicable en route code for the holding altitude if holding is necessary before entering the terminal area and the appropriate code in subparas 1 or 2.

REFERENCE-

FAAO JO 7110.65, Para 4–2–8, IFR-VFR and VFR-IFR Flights. FAAO JO 7110.65, Para 5–2–3, Nondiscrete Environment. FAAO JO 7110.65, Para 5–2–4, Mixed Environment. FAAO JO 7110.65, Para 5–2–9, VFR Code Assignments. FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-7. EMERGENCY CODE ASSIGNMENT

Assign codes to emergency aircraft as follows:

a. Code 7700 when the pilot declares an emergency and the aircraft is not radar identified.

PHRASEOLOGY-

SQUAWK MAYDAY ON 7700.

b. After radio and radar contact have been established, you may request other than single-piloted helicopters and single-piloted turbojet aircraft to change from **Code 7700** to another code appropriate for your radar beacon code environment.

NOTE-

1. The code change, based on pilot concurrence, the nature of the emergency, and current flight conditions will signify to other radar facilities that the aircraft in distress is identified and under ATC control.

2. Pilots of single-piloted helicopters and single-piloted turbojet aircraft may be unable to reposition transponder controls during the emergency.

PHRASEOLOGY-

RADAR CONTACT (position). IF FEASIBLE, SQUAWK (code).

REFERENCE-

FAAO JO 7110.65, Para 5-3-3, Beacon Identification Methods.

c. The following must be accomplished on a Mode C equipped VFR aircraft which is in emergency but no longer requires the assignment of **Code 7700**:

1. *TERMINAL*. Assign a beacon code that will permit terminal minimum safe altitude warning (MSAW) alarm processing.

2. *EN ROUTE*. An appropriate keyboard entry must be made to ensure en route MSAW (EMSAW) alarm processing.

5-2-8. RADIO FAILURE

When you observe a **Code 7600** display, apply the procedures in para 10–4–4, Communications Failure.

NOTE-

Should a transponder-equipped aircraft experience a loss of two-way radio communications capability, the pilot can be expected to adjust his/her transponder to Code 7600. REFERENCE-

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FAAO JO 7110.65, Para 5-3-3, Beacon Identification Methods.
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5–2–9. UNMANNED AIRCRAFT SYSTEMS (UAS) LOST LINK

Code 7400 may be displayed by unmanned aircraft systems (UAS) when the control link between the aircraft and the pilot is lost. Lost link procedures are programmed into the flight management system and associated with the flight plan being flown. following:

When you observe a Code 7400 display, do the

a. Determine the lost link procedure, as outlined in the Special Airworthiness Certificate or Certificate of Waiver or Authorization (COA).

b. Coordinate, as required, to allow UAS to execute the lost link procedure.

c. Advise Front Line Manager (FLM), when feasible, so the event can be documented.

d. If you observe or are informed by the PIC that the UAS is deviating from the programmed Lost Link procedure, or is encountering another anomaly, treat the situation in accordance with FAA Order J0 7110.65 Chapter 10, Section 1, Para 10-1-1(c).

NOTE-

1. The available lost link procedure should, at a minimum, include lost link route of flight, lost link orbit points, lost link altitudes, communications procedures and preplanned flight termination points if the event recovery of the UAS is deemed unfeasible.

2. Each lost link procedure may differ and is dependent upon airframe and operation. These items are contained in the flight's Certificate of Authorization or Waiver (COA) and must be made available to ATC personnel in their simplest form at positions responsible for Unmanned Aircraft (UAs).

3. Some UA airframes (Global Hawk) will not be programmed upon the NAS Automation roll out to squawk 7400. These airframes will continue to squawk 7600 should a lost link occur. The ATC Specialist must apply the same procedures described above.

5-2-10. VFR CODE ASSIGNMENTS

a. For VFR aircraft receiving radar advisories, assign an appropriate function code or computer-assigned code for the code environment in which you are providing service.

NOTE-

1. Para 5-2-2, Discrete Environment; para 5-2-3, Nondiscrete Environment, and para 5-2-4, Mixed Environment, specify code assignment procedures to follow for the three code environments.

2. Para 5–2–6, Function Code Assignments, specifies the function code allocation from which an appropriate code for the aircraft indicated in subpara a should be selected. In the terminal environment, additional function codes may be authorized by the appropriate service area office.

1. If the aircraft is outside of your area of responsibility and an operational benefit will be gained by retaining the aircraft on your frequency for the purpose of providing services, ensure that coordination has been effected:

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(a) As soon as possible after positive identification, and

(b) Prior to issuing a control instruction or providing a service other than a safety alert/traffic advisory.

NOTE-

Safety alerts/traffic advisories may be issued to an aircraft prior to coordination if an imminent situation may be averted by such action. Coordination should be effected as soon as possible thereafter.

b. Instruct IFR aircraft which cancel an IFR flight plan and are not requesting radar advisory service and VFR aircraft for which radar advisory service is being terminated to squawk the VFR code.

PHRASEOLOGY-

SQUAWK VFR.

or

SQUAWK 1200.

NOTE-

1. Aircraft not in contact with an ATC facility may squawk 1255 in lieu of 1200 while en route to/from or within the designated fire fighting area(s).

2. VFR aircraft which fly authorized SAR missions for the USAF or USCG may be advised to squawk 1277 in lieu of 1200 while en route to/from or within the designated search area.

3. Gliders not in contact with an ATC facility should squawk 1202 in lieu of 1200. Gliders operate under some flight and maneuvering limitations. They may go from essentially stationary targets while climbing and thermaling to moving targets very quickly. They can be expected to make radical changes in flight direction to find lift and cannot hold altitude in a response to an ATC request. Gliders may congregate together for short periods of time to climb together in thermals and may cruise together in loose formations while traveling between thermals.

REFERENCE-

FAAO 7110.66, National Beacon Code Allocation Plan.

c. When an aircraft changes from VFR to IFR, the controller must assign a beacon code to Mode C equipped aircraft that will allow MSAW alarms.

REFERENCE-FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5–2–11. BEACON CODE FOR PRESSURE SUIT FLIGHTS AND FLIGHTS ABOVE FL 600

a. Mode 3/A, **Code 4400**, and discrete **Codes 4440 through 4465** are reserved for use by R-71, F-12, U-2, B-57, pressure suit flights, and aircraft operations above FL 600.

NOTE-

The specific allocation of the special use codes in subset 4400 is in FAAO 7110.66, National Beacon Code Allocation Plan.

b. Ensure that aircraft remain on **Code 4400** or one of the special use discrete codes in the **4400** subset if filed as part of the flight plan. Except when unforeseen events, such as weather deviations, equipment failure, etc., cause more than one aircraft with same Mode 3/A discrete beacon codes to be in the same or adjacent ARTCC's airspace at the same time, a controller may request the pilot to make a code change, squawk standby, or to stop squawk as appropriate.

NOTE-

Due to the inaccessibility of certain equipment to the flight crews, **Code 4400** or a discrete code from the **4400** subset is preset on the ground and will be used throughout the flight profile including operations below FL 600. Controllers should be cognizant that not all aircraft may be able to accept the transponder changes identified in the exception. Emergency **Code 7700**, however, can be activated.

REFERENCE-

FAAO JO 7110.65, Para 5-3-3, Beacon Identification Methods.

5–2–12. AIR DEFENSE EXERCISE BEACON CODE ASSIGNMENT

EN ROUTE

Ensure exercise FAKER aircraft remain on the exercise flight plan filed discrete beacon code.

NOTE-

1. NORAD will ensure exercise FAKER aircraft flight plans are filed containing discrete beacon codes from the Department of Defense code allocation specified in FAA Order JO 7610.4, Special Operations, Appendix 6.

2. NORAD will ensure that those FAKER aircraft assigned the same discrete beacon code are not flight planned in the same or any adjacent ARTCC's airspace at the same time. (Simultaneous assignment of codes will only occur when operational requirements necessitate.)

REFERENCE-

FAAO JO 7110.65, Para 5-3-3, Beacon Identification Methods.

5-2-13. STANDBY OR LOW SENSITIVITY OPERATION

You may instruct an aircraft operating on an assigned code to change transponder to "standby" or "low sensitivity" position:

NOTE-

National standards no longer require improved transponder to be equipped with the low sensitivity feature. Therefore, aircraft with late model transponders will be unable to respond to a request to "squawk low."

a. When approximately 15 miles from its destination and you no longer desire operation of the transponder.

b. When necessary to reduce clutter in a multi-target area, or to reduce "ring-around" or other phenomena, provided you instruct the aircraft to return to "normal sensitivity" position as soon as possible thereafter.

PHRASEOLOGY-SQUAWK STANDBY,

or

SQUAWK LOW/NORMAL.

REFERENCE-FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-14. CODE MONITOR

Continuously monitor the Mode 3/A radar beacon codes assigned for use by aircraft operating within your area of responsibility when nonautomated beacon decoding equipment (e.g., 10-channel decoder) is used to display the target symbol.

REFERENCE-

FAAO JO 7110.65, Para 5-2-6, Function Code Assignments.

NOTE-

In addition to alphanumeric and control symbology processing enhancements, the MEARTS and STARS systems are equipped with automatic beacon decoders. Therefore, in facilities where the automatic beacon decoders are providing the control slash video, there is no requirement to have the non-automated decoding equipment operating simultaneously.

REFERENCE-

FAAO JO 7210.3, Para 3–7–4, Monitoring of Mode 3/A Radar Beacon Codes.

a. This includes the appropriate IFR code actually assigned and, additionally, Code 1200, Code 1202, Code 1255, and Code 1277 unless your area of responsibility includes only Class A airspace. During periods when ring-around or excessive VFR target

presentations derogate the separation of IFR traffic, the monitoring of VFR Code 1200, Code 1202, Code 1255, and Code 1277 may be temporarily discontinued.

b. Positions of operation which contain a restricted or warning area or VR route within or immediately adjacent to their area of jurisdiction must monitor **Code 4000** and any other code used in lieu of **4000** within the warning/restricted area or VR route. If by local coordination with the restricted/warning area or VR route user a code other than 4000 is to be exclusively used, then this code must be monitored.

c. If a normally assigned beacon code disappears, check for a response on the following codes in the order listed and take appropriate action:

NOTE-

When Codes 7500 and/or 7600 have been preselected, it will be necessary for the ID-SEL-OFF switches for these codes to be left in the off position so that beacon target for an aircraft changing to one of these codes will disappear, thereby alerting the controller to make the check. This check will not be required if automatic alerting capability exists.

1. Code 7500 (hijack code).

REFERENCE-

FAAO JO 7110.65, Para 10-2-6, Hijacked Aircraft.

2. Code 7600 (loss of radio communications code).

5-2-15. FAILURE TO DISPLAY ASSIGNED BEACON CODE OR INOPERATIVE/ MALFUNCTIONING TRANSPONDER

a. Inform an aircraft with an operable transponder that the assigned beacon code is not being displayed.

PHRASEOLOGY-

(Identification) RESET TRANSPONDER, SQUAWK (appropriate code).

b. Inform an aircraft when its transponder appears to be inoperative or malfunctioning.

PHRASEOLOGY-

(Identification) YOUR TRANSPONDER APPEARS INOPERATIVE/MALFUNCTIONING, RESET, SQUAWK (appropriate code).

c. Ensure that the subsequent control position in the facility or the next facility, as applicable, is notified when an aircraft transponder is malfunctioning/inoperative.

REFERENCE-

FAAO JO 7110.65, Para 5-3-3, Beacon Identification Methods.

5–2–16. INOPERATIVE OR MALFUNCTIONING INTERROGATOR

Inform aircraft concerned when the ground interrogator appears to be inoperative or malfunctioning.

PHRASEOLOGY-

(Name of facility or control function) BEACON INTERROGATOR INOPERATIVE/MALFUNCTIONING.

REFERENCE– FAAO JO 7110.65, Para 5–1–3, Radar Use. FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-17. FAILED TRANSPONDER IN CLASS A AIRSPACE

Disapprove a request or withdraw previously issued approval to operate in Class A airspace with a failed transponder solely on the basis of traffic conditions or other operational factors.

REFERENCE-

FAAO JO 7110.65, Para 5–1–3, Radar Use. FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5–2–18. VALIDATION OF MODE C READOUT

Ensure that Mode C altitude readouts are valid after accepting an interfacility handoff, initial track start, track start from coast/suspend tabular list, missing, or unreasonable Mode C readouts. When an X is displayed adjacent to the Mode C, the Mode C altitude readout must be validated after the X is no longer displayed in the data block. (CTRD_equipped tower cabs are not required to validate Mode C readouts after receiving interfacility handoffs from TRACONs according to the procedures in Para 5-4-3, Methods, subpara a4.)

a. Consider an altitude readout valid when:

1. It varies less than 300 feet from the pilot reported altitude, or

PHRASEOLOGY-

(If aircraft is known to be operating below the lowest useable flight level),

SAY ALTITUDE.

or

(If aircraft is known to be operating at or above the lowest useable flight level),

SAY FLIGHT LEVEL.

2. You receive a continuous readout from an aircraft on the airport and the readout varies by less than 300 feet from the field elevation, or

NOTE-

A continuous readout exists only when the altitude filter limits are set to include the field elevation.

REFERENCE-

FAAO JO 7110.65, Para 5–2–24, Altitude Filters. FAAO JO 7110.65, Para 5–14–5, Selected Altitude Limits. FAAO JO 7210.3, Para 11–2–3, Display Data.

3. You have correlated the altitude information in your data block with the validated information in a data block generated in another facility (by verbally coordinating with the other controller) and your readout is exactly the same as the readout in the other data block.

b. When unable to validate the readout, do not use the Mode C altitude information for separation.

c. Whenever you observe an invalid Mode C readout below FL 180:

1. Issue the correct altimeter setting and confirm the pilot has accurately reported the altitude.

PHRASEOLOGY-

(Location) ALTIMETER (appropriate altimeter), VERIFY ALTITUDE.

2. If the altitude readout continues to be invalid:

(a) Instruct the pilot to turn off the altitudereporting part of his/her transponder and include the reason; and

(b) Notify the operations supervisor-incharge of the aircraft call sign.

PHRASEOLOGY-

STOP ALTITUDE SQUAWK. ALTITUDE DIFFERS BY (number of feet) FEET.

d. Whenever you observe an invalid Mode C readout at or above FL 180, unless the aircraft is descending below Class A airspace:

1. Verify that the pilot is using 29.92 inches of mercury as the altimeter setting and has accurately reported the altitude.

PHRASEOLOGY-

VERIFY USING TWO NINER NINER TWO AS YOUR ALTIMETER SETTING.

(If aircraft is known to be operating at or above the lowest useable flight level),

VERIFY FLIGHT LEVEL.

2. If the Mode C readout continues to be invalid:

(a) Instruct the pilot to turn off the altitudereporting part of his/her transponder and include the reason; and

(b) Notify the operational supervisor-incharge of the aircraft call sign.

PHRASEOLOGY-

STOP ALTITUDE SQUAWK. ALTITUDE DIFFERS BY (number of feet) FEET.

e. Whenever possible, inhibit altitude readouts on all consoles when a malfunction of the ground equipment causes repeated invalid readouts.

5-2-19. ALTITUDE CONFIRMATION-MODE C

Request a pilot to confirm assigned altitude on initial contact unless:

NOTE-

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

a. The pilot states the assigned altitude, or

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

c. The Mode C readout is valid and indicates that the aircraft is established at the assigned altitude, or

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

PHRASEOLOGY-

(In level flight situations), VERIFY AT (altitude/flight level).

(In climbing/descending situations),

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

VERIFY ASSIGNED ALTITUDE (altitude).

or

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

VERIFY ASSIGNED FLIGHT LEVEL (flight level).

REFERENCE-FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-20. ALTITUDE CONFIRMATION-NON-MODE C

a. Request a pilot to confirm assigned altitude on initial contact unless:

NOTE-

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

1. The pilot states the assigned altitude, or

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

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

PHRASEOLOGY-

(In level flight situations), VERIFY AT (altitude/flight level).

(In climbing/descending situations), VERIFY ASSIGNED ALTITUDE/FLIGHT LEVEL (altitude/flight level).

b. USA. Reconfirm all pilot altitude read backs.

PHRASEOLOGY-

(If the altitude read back is correct),

AFFIRMATIVE (altitude).

(If the altitude read back is not correct),

NEGATIVE. CLIMB/DESCEND AND MAINTAIN (altitude),

or

NEGATIVE. MAINTAIN (altitude).

REFERENCE-FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5–2–21. AUTOMATIC ALTITUDE REPORTING

Inform an aircraft when you want it to turn on/off the automatic altitude reporting feature of its transponder.

PHRASEOLOGY– SQUAWK ALTITUDE,

or

STOP ALTITUDE SQUAWK.

NOTE-

Controllers should be aware that not all aircraft have a capability to disengage the altitude squawk independently from the beacon code squawk. On some aircraft both functions are controlled by the same switch.

REFERENCE-

FAAO JO 7110.65, Para 5–2–18, Validation of Mode C Readout. FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods. P/CG Term– Automatic Altitude Report.

5–2–22. INFLIGHT DEVIATIONS FROM TRANSPONDER/MODE C REQUIREMENTS BETWEEN 10,000 FEET AND 18,000 FEET

Apply the following procedures to requests to deviate from the Mode C transponder requirement by aircraft operating in the airspace of the 48 contiguous states and the District of Columbia at and above 10,000 feet MSL and below 18,000 feet MSL, excluding the airspace at and below 2,500 feet AGL.

NOTE-

1. 14 CFR Section 91.215(b) provides, in part, that all U.S. registered civil aircraft must be equipped with an operable, coded radar beacon transponder when operating in the altitude stratum listed above. Such transponders must have a Mode 3/A 4096 code capability, replying to Mode 3/A interrogation with the code specified by ATC, or a Mode S capability, replying to Mode 3/A interrogations with the code specified by ATC. The aircraft must also be equipped with automatic pressure altitude reporting equipment having a Mode C capability that automatically replies to Mode C interrogations by transmitting pressure altitude information in 100–foot increments.

2. The exception to 14 CFR Section 91.215 (b) is 14 CFR Section 91.215(b)(5) which states: except balloons, gliders, and aircraft without engine-driven electrical systems.

REFERENCE-

FAAO JO 7210.3, Chapter 19, Temporary Flight Restrictions.

a. Except in an emergency, do not approve inflight requests for authorization to deviate from 14 CFR Section 91.215(b)(5)(i) requirements originated by aircraft without transponder equipment installed.

b. Approve or disapprove other inflight deviation requests, or withdraw approval previously issued to such flights, solely on the basis of traffic conditions and other operational factors.

c. Adhere to the following sequence of action when an inflight VFR deviation request is received from an aircraft with an inoperative transponder or Mode C, or is not Mode C equipped:

1. Suggest that the aircraft conduct its flight in airspace unaffected by the CFRs.

2. Suggest that the aircraft file an IFR flight plan.

3. Suggest that the aircraft provide a VFR route of flight and maintain radio contact with ATC.

d. Do not approve an inflight deviation unless the aircraft has filed an IFR flight plan or a VFR route of flight is provided and radio contact with ATC is maintained.

e. You may approve an inflight deviation request which includes airspace outside your jurisdiction without the prior approval of the adjacent ATC sector/facility providing a transponder/Mode C status report is forwarded prior to control transfer.

f. Approve or disapprove inflight deviation requests within a reasonable period of time or advise when approval/disapproval can be expected.

REFERENCE-FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-23. BEACON TERMINATION

Inform an aircraft when you want it to turn off its transponder.

PHRASEOLOGY-

STOP SQUAWK.

(For a military aircraft when you do not know if the military service requires that it continue operating on another mode),

STOP SQUAWK (mode in use).

REFERENCE– FAAO JO 7110.65, Para 5–3–3, Beacon Identification Methods.

5-2-24. ALTITUDE FILTERS

TERMINAL

Set altitude filters to display Mode C altitude readouts to encompass all altitudes within the controller's jurisdiction. Set the upper limits no lower than 1,000 feet above the highest altitude for which the controller is responsible. In those stratified positions, set the lower limit to 1,000 feet or more below the lowest altitude for which the controller is responsible. When the position's area of responsibility includes down to an airport field elevation, the facility will normally set the lower altitude filter limit to encompass the field elevation so that provisions of para 2–1–6, Safety Alert, and para 5–2–18, Validation of Mode C Readout, subpara a2 may be applied. Air traffic managers may authorize temporary suspension of this requirement when target clutter is excessive.

5-2-25. INOPERATIVE OR MALFUNCTIONING ADS-B TRANSMITTER

Inform an aircraft when the ADS-B transmitter appears to be inoperative or malfunctioning. Notify the FLM/CIC of the aircraft call sign and location of aircraft.

PHRASEOLOGY-

(Aircraft ID) YOUR ADS-B TRANSMITTER APPEARS TO BE INOPERATIVE / MALFUCTIONING.

5-2-26. ADS-B ALERTS

a. Call Sign Mis–Match (CSMM). A CSMM alert will occur when the ADS–B broadcast call sign does not match the flight plan call sign.

PHRASEOLOGY-

(Aircraft ID) YOUR ADS-B CALL SIGN DOES NOT MATCH YOUR FLIGHT PLAN CALL SIGN.

b. Duplicate ICAO Address. If the broadcast ICAO address is shared with one or more flights in the same ADS–B Service Area (regardless of altitude), and radar reinforcement is not available, target resolution may be lost on one or both targets. Notify the FLM/CIC of the aircraft call sign and location of aircraft.

NOTE-

1. If this occurs controllers should ensure targets remain radar reinforced or at least 6 NMs apart.

2. Duplicate ICAO Address Alerts appear as "DA" and are associated with the Data Block (DB) on STARS and CARTS systems. Duplicate ICAO Address Alerts appear as "DUP" and are associated with the DB on MEARTS systems. Duplicate ICAO Address Alerts appear as "Duplicate 24-bit Address" on ERAM systems.

(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-

1. The application of Paragraph 5-8-3, Successive or Simultaneous Departures, satisfies this requirement.

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

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.

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

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

1. The leading aircraft's weight class is the same or less than the trailing aircraft;

2. Super and heavy aircraft are permitted to participate in the separation reduction as the trailing aircraft only;

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

4. CTRDs are operational and used for quick glance references;

REFERENCE-FAAO JO 7110.65, Para 3–1–9, Use of Tower Radar Displays.

5. Turnoff points are visible from the control tower.

REFERENCE-

```
FAAO JO 7110.65, Para 2–1–19, Wake Turbulence.
FAAO JO 7110.65, Para 3–9–6, Same Runway Separation.
FAAO JO 7110.65, Para 5–5–7, Passing or Diverging.
FAAO JO 7110.65, Para 5–5–9, Separation from Obstructions.
FAAO JO 7110.65, Para 5–8–3, Successive or Simultaneous Departures.
FAAO JO 7110.65, Para 5–9–5, Approach Separation Responsibility.
FAAO JO 7110.65, Para 7–6–7, Sequencing.
FAAO JO 7110.65, Para 7–8–3, Separation.
FAAO JO 7110.65 Para 7–8–3, Separation.
FAAO JO 7110.65 Para 7–8–3, Separation.
```

5-5-5. VERTICAL APPLICATION

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

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

REFERENCE-

```
FAAO JO 7110.65, Para 4–5–1, Vertical Separation Minima.
FAAO JO 7110.65, Para 5–2–18, Validation of Mode C Readout.
FAAO JO 7110.65, Para 7–7–3, Separation.
FAAO JO 7110.65, Para 7–8–3, Separation.
FAAO JO 7110.65, Para 7–9–4, Separation.
```

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

NOTE-

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

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

REFERENCE-

FAAO JO 7110.65, Para 2–1–3, Procedural Preference. FAAO JO 7110.65, Para 4–5–1, Vertical Separation Minima. FAAO JO 7110.65, Para 5–2–18, Validation of Mode C Readout. FAAO JO 7110.65, Para 6–6–1, Application.

5-5-6. EXCEPTIONS

a. Do not use Mode C to effect vertical separation with an aircraft on a cruise clearance, contact approach, or as specified in para 5-15-4, System Requirements, subpara e3.

REFERENCE-

FAAO JO 7110.65, Para 6–6–2, Exceptions. FAAO JO 7110.65, Para 7–4–6, Contact Approach. P/CG Term– Cruise.

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

1. Severe turbulence is reported.

2. Aircraft are conducting military aerial refueling.

REFERENCE-

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

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

5-5-7. PASSING OR DIVERGING

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

1. Single Site ASR or FUSION Mode

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

NOTE-

Two aircraft, both assigned radar vectors with an angular difference of at least 15 degrees, is considered a correct application of this paragraph.

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

REFERENCE-

FAAO JO 7110.65, Para 1-2-2, Course Definitions.

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

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

NOTE-

Two aircraft, both assigned radar vectors with an angular difference of at least 45 degrees, is considered a correct application of this paragraph.

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

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

REFERENCE-FAAO JO 7110.65, Para 1–2–2, Course Definitions.

NOTE-

Apply en route separation rules when using multi-sensor mode.

b. *EN ROUTE*. Vertical separation between aircraft may be discontinued when they are on

opposite courses as defined in para 1–2–2, Course Definitions; and

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

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

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

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

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

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

EXAMPLE-

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

(If the answer is in the affirmative):

"Report passing the traffic."

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

5-5-8. ADDITIONAL SEPARATION FOR FORMATION FLIGHTS

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

a. Separate a standard formation flight by adding 1 mile to the appropriate radar separation minima.

REFERENCE– FAAO JO 7110.65, Para 2–1–13, Formation Flights. FAAO JO 7110.65, Para 5–5–1, Application. FAAO JO 7110.65, Para 7–7–3, Separation. P/CG Term– Formation Flight.

b. Separate two standard formation flights from each other by adding 2 miles to the appropriate separation minima.

c. Separate a nonstandard formation flight by applying the appropriate separation minima to the perimeter of the airspace encompassing the nonstandard formation or from the outermost aircraft of the nonstandard formation whichever applies.

d. If necessary for separation between a nonstandard formation and other aircraft, assign an appropriate beacon code to each aircraft in the formation or to the first and last aircraft in-trail.

NOTE-

The additional separation provided in Paragraph 5–5–8, Additional Separation for Formation Flights, is not normally added to wake turbulence separation when a formation is following a heavier aircraft since none of the formation aircraft are likely to be closer to the heavier aircraft than the lead aircraft (to which the prescribed wake turbulence separation has been applied).

REFERENCE-

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

5–5–9. SEPARATION FROM OBSTRUCTIONS

a. TERMINAL. Separate aircraft from prominent obstructions depicted on the radar display by the following minima:

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

2. When 40 miles or more from the antenna-5 miles.

b. TERMINAL. Vertical separation of aircraft above a prominent obstruction depicted on the radar display and contained within a buffer area may be discontinued after the aircraft has passed the obstruction.

c. EAS. Apply the radar separation minima specified in Para 5-5-4, Minima.

5-5-10. ADJACENT AIRSPACE

a. If coordination between the controllers concerned has not been effected, separate radar-controlled aircraft from the boundary of adjacent airspace in which radar separation is also being used by the following minima:

REFERENCE-

FAAO JO 7110.65, Para 2-1-14, Coordinate Use of Airspace.

1. When less than 40 miles from the antenna– $1 \frac{1}{2}$ miles.

2. When 40 miles or more from the antenna- $2 \frac{1}{2}$ miles.

3. *EAS*:

(a) Below Flight Level 600– $2^{1/2}$ miles.

(b) Flight Level 600 and above- 5 miles.

b. Separate radar-controlled aircraft from the boundary of airspace in which nonradar separation is being used by the following minima:

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

2. When 40 miles or more from the antenna-5 miles.

3. *EAS*:

(a) Below Flight Level 600– 5 miles.

(b) Flight Level 600 and above– 10 miles.

c. The provisions of subparas a and b do not apply to VFR aircraft being provided Class B, Class C, or TRSA services. Ensure that the targets of these aircraft do not touch the boundary of adjacent airspace.

d. VFR aircraft approaching Class B, Class C, Class D, or TRSA airspace which is under the control jurisdiction of another air traffic control facility should either be provided with a radar handoff or be advised that radar service is terminated, given their position in relation to the Class B, Class C, Class D, or TRSA airspace, and the ATC frequency, if known, for the airspace to be entered. These actions should be accomplished in sufficient time for the pilot to obtain the required ATC approval prior to entering the airspace involved, or to avoid the airspace.

5-5-11. EDGE OF SCOPE

Separate a radar-controlled aircraft climbing or descending through the altitude of an aircraft that has been tracked to the edge of the scope/display by the following minima until nonradar separation has been established:

a. When less than 40 miles from the antenna-*3 miles* from edge of scope.

b. When 40 miles or more from the antenna-5 *miles* from edge of scope.

c. *EAS*:

1. Below Flight Level 600– 5 miles.

2. Flight Level 600 and above– 10 miles.

5-5-12. BEACON TARGET DISPLACEMENT

When using a radar target display with a previously specified beacon target displacement to separate a beacon target from a primary target, adjacent airspace, obstructions, or terrain, add a 1 mile correction factor to the applicable minima. The maximum allowable beacon target displacement which may be specified by the facility air traffic manager is 1/2 mile.

REFERENCE-

FAAO JO 7210.3, Para 3-7-4, Monitoring of Mode 3/A Radar Beacon Codes.

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-

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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-

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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 published crossing restrictions (SID/STAR)

must be issued/reissued all applicable restrictions or be instructed to Climb Via/Descend Via.

PHRASEOLOGY-

PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BELOW (altitude), then CLIMB VIA/DESCEND VIA (SID/STAR)

EXAMPLE-

"Cleared direct Luxor, then descend via the Ksino One arrival."

"Cleared direct HITME, cross HITME at or above one one thousand, then climb via the Boach Five departure."

g. Aircraft may not be vectored off an Obstacle Departure Procedure (ODP), or issued an altitude lower than published altitude on an ODP, until at or above the MVA/MIA, at which time the ODP is 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 8. Radar Departures

5-8-1. PROCEDURES

Use standard departure routes and channelized altitudes whenever practical to reduce coordination. Do not, however, assign these routes solely to provide for possible radar or communication failure.

5-8-2. INITIAL HEADING

a. Before departure, assign the initial heading to be flown if a departing aircraft is to be vectored immediately after takeoff.

PHRASEOLOGY-

FLY RUNWAY HEADING. TURN LEFT/RIGHT, HEADING (degrees).

NOTE-

1. *TERMINAL.* A purpose for the heading is not necessary, since pilots operating in a radar environment associate assigned headings with vectors to their planned route of flight.

2. ATC assumes responsibility for terrain and obstacle avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/missed approach procedures, or are issued go-around instructions, except when utilizing a Diverse Vector Area (DVA) with an aircraft departing from the surface.

REFERENCE-

FAAO JO 7110.65, Para 4–3–2, Departure Clearances. FAAO JO 7110.65, Para 5–6–3, Vectors Below Minimum Altitude.

b. Issue an altitude to maintain with the initial heading when the heading will take the aircraft off a departure procedure that contains both a published lateral path to a waypoint and crossing restrictions.

c. When conducting simultaneous parallel runway departures utilizing RNAV SIDs, advise aircraft of the initial fix/waypoint on the RNAV route.

PHRASEOLOGY-

RNAV to (fix/waypoint), RUNWAY (number), CLEARED FOR TAKEOFF.

EXAMPLE-

"RNAV to MPASS, Runway Two-Six Left, cleared for takeoff."

NOTE-

1. TERMINAL. A purpose for an initial waypoint advisory is not necessary since pilots associate this advisory with the flight path to their planned route of flight. Pilots must immediately advise ATC if a different RNAV SID is entered in the aircraft FMS. **2.** *The SID transition is not restated as it is contained in the ATC clearance.*

3. Aircraft cleared via RNAV SIDs designed to begin with a vector to the initial waypoint are assigned a heading before departure.

REFERENCE-

FAAO JO 7110.65, Para 3-9-9, Takeoff Clearance FAAO JO 7110.65, Para 4-3-2, Departure Clearances AIM, Para 5-2-7. Departure Control

5-8-3. SUCCESSIVE OR SIMULTANEOUS DEPARTURES

TERMINAL

Separate aircraft departing from the same airport/ heliport or adjacent airports/heliports in accordance with the following minima provided radar identification with the aircraft will be established within 1 mile of the takeoff runway end/helipad and courses will diverge by 15 degrees or more.

NOTE-

1. FAAO 8260.46, Departure Procedure (DP) Program, and FAAO 8260.3, United States Standard for Terminal Instrument Procedures (TERPS), Volume 4, establishes guidelines for IFR departure turning procedures which assumes a climb to 400 feet above the departure end of runway (DER) elevation before a turn is commenced. TERPS criteria ensures obstacle clearance with a climb gradient of 200 feet per nautical mile from the DER. "Immediately after departure" is considered to be any turn that provides at least 15 degrees of divergence that commences no later than 2 miles from the DER.

2. Consider known aircraft performance characteristics when applying initial separation to successive departing aircraft.

3. When one or both of the departure surfaces is a helipad, use the takeoff course of the helicopter as a reference, comparable to the centerline of a runway and the helipad center as the threshold.

a. Between aircraft departing the same runway/ helipad or parallel runways/helicopter takeoff courses separated by less than 2,500 feet– 1 mile if courses diverge by 15 degrees or more immediately after departure or 10 degrees or more when both aircraft are departing the same runway and both are flying an RNAV SID. (See FIG 5–8–1, FIG 5–8–2, and FIG 5–8–3.)

NOTE-

RNAV SIDs specific to this paragraph are those SIDs

constructed with a specific lateral path that begins at the DER.

FIG 5-8-1

Successive Departures





FIG 5–8–3 Simultaneous Departures



NOTE-

This procedure does not apply when wake turbulence separation is required.

REFERENCE-

FAAO JO 7110.65, Para 3–9–7, Wake Turbulence Separation for Intersection Departures. FAAO JO 7110.65, Para 3–9–8, Intersecting Runway/Intersecting Flight Path Operations. FAAO JO 7110.65, Para 5–5–4, Minima. FAAO JO 7110.65, Para 5–5-4, Minima, Subparagraph g. **b.** Between aircraft departing from diverging runways:

1. Nonintersecting runways. Authorize simultaneous takeoffs if runways diverge by 15 degrees or more. (See FIG 5-8-4.)

FIG 5-8-4 Nonintersecting Runway Departures



2. Intersecting runways and/or helicopter takeoff courses which diverge by 15 degrees or more. Authorize takeoff of a succeeding aircraft when the preceding aircraft has passed the point of runway and/or takeoff course intersection. When applicable, apply the procedure in para 3–9–5, Anticipating Separation. (See FIG 5–8–5 and FIG 5–8–6.)

FIG 5-8-5 Intersecting Runway Departures



NOTE-

This procedure does not apply when wake turbulence separation is required.

REFERENCE-

FAAO JO 7110.65, Para 5-5-4, Minima, Subparagraph g.

Section 14. Automation – En Route

5-14-1. CONFLICT ALERT (CA) AND MODE C INTRUDER (MCI) ALERT

a. When a CA or MCI alert is displayed, evaluate the reason for the alert without delay and take appropriate action.

REFERENCE-

FAAO JO 7110.65, Para 2-1-6, Safety Alert.

b. If another controller is involved in the alert, initiate coordination to ensure an effective course of action. Coordination is not required when immediate action is dictated.

c. Suppressing/Inhibiting CA/MCI alert.

1. The controller may suppress the display of a CA/MCI alert from a control position with the application of one of the following suppress/inhibit computer functions:

(a) The Conflict Suppress (CO) function may be used to suppress the CA/MCI display between specific aircraft for a specific alert.

NOTE-

See NAS-MD-678 for the EARTS conflict suppress message.

(b) The Group Suppression (SG) function must be applied exclusively to inhibit the displaying of alerts among military aircraft engaged in special military operations where standard en route separation criteria does not apply.

NOTE-

Special military operations where the SG function would typically apply involve those activities where military aircraft routinely operate in proximities to each other that are less than standard en route separation criteria; i.e., air refueling operations, ADC practice intercept operations, etc.

2. The computer entry of a message suppressing a CA/MCI alert constitutes acknowledgment for the alert and signifies that appropriate action has or will be taken.

3. The CA/MCI alert may not be suppressed or inhibited at or for another control position without being coordinated.

5–14–2. EN ROUTE MINIMUM SAFE ALTITUDE WARNING (E-MSAW)

a. When an E-MSAW alert is displayed, immediately analyze the situation and take the appropriate action to resolve the alert.

NOTE-

Caution should be exercised when issuing a clearance to an aircraft in reaction to an E-MSAW alert to ensure that adjacent MIA areas are not a factor.

REFERENCE-

FAAO JO 7110.65, Para 2-1-6, Safety Alert.

b. The controller may suppress the display of an E-MSAW alert from his/her control position with the application of one of the following suppress/inhibit computer functions:

1. The specific alert suppression message may be used to inhibit the E-MSAW alerting display on a single flight for a specific alert.

2. The indefinite alert suppression message must be used exclusively to inhibit the display of E-MSAW alerts on aircraft known to be flying at an altitude that will activate the alert feature of one or more MIA areas within an ARTCC.

NOTE-

1. The indefinite alert suppression message will remain in effect for the duration of the referenced flight's active status within the ARTCC unless modified by controller action.

2. The indefinite alert suppression message would typically apply to military flights with clearance to fly low-level type routes that routinely require altitudes below established minimum IFR altitudes.

c. The computer entry of a message suppressing or inhibiting E-MSAW alerts constitutes acknowledgment for the alert and indicates that appropriate action has or will be taken to resolve the situation.

5-14-3. COMPUTER ENTRY OF FLIGHT PLAN INFORMATION

a. Altitude

1. The altitude field(s) of the data block must always reflect the current status of the aircraft unless otherwise specified in an appropriate facility directive.

2. Unless otherwise specified in a facility directive or letter of agreement, do not modify assigned or interim altitude information prior to establishing communication with an aircraft that is outside your area of jurisdiction unless verbal coordination identifying who will modify the data block has been accomplished.

NOTE-

1. A local interim altitude (LIA) can be used as a means of recording interfacility coordination.

2. Conflict probe in EDST does not probe for the LIA.

3. Whenever an aircraft is cleared to maintain an altitude different from that in the flight plan database, enter into the computer one of the following:

(a) The new assigned altitude if the aircraft will (climb or descend to and) maintain the new altitude, or

(b) An interim altitude if the aircraft will (climb or descend to and) maintain the new altitude for a short period of time and subsequently be recleared to the altitude in the flight plan database or a new altitude or a new interim altitude, or

(c) Where appropriate for interfacility handoffs, an LIA when the assigned altitude differs from the coordinated altitude unless verbally coordinated or specified in a letter of agreement or facility directive.

NOTE-

A facility directive may be published, in accordance with JO 7210.3, Paragraph 8-2-7, Waiver to Interim Altitude Requirements, deleting the interim altitude computer entry requirements of subpara 3(b).

b. Flight Plan Route Data

This information must not be modified outside of the controller's area of jurisdiction unless verbally coordinated or specified in a Letter of Agreement or Facility Directive.

5-14-4. ENTRY OF REPORTED ALTITUDE

Whenever Mode C altitude information is either not available or is unreliable, enter reported altitudes into the computer as follows:

NOTE-

Altitude updates are required to assure maximum accuracy in applying slant range correction formulas.

a. When an aircraft reaches the assigned altitude.

b. When an aircraft at an assigned altitude is issued a clearance to climb or descend.

c. A minimum of each 10,000 feet during climb to or descent from FL 180 and above.

5-14-5. SELECTED ALTITUDE LIMITS

The display of Mode C targets and limited data blocks is necessary for application of Merging Target Procedures. Sectors must ensure the display of Mode C targets and data blocks by entering appropriate altitude limits and display filters to include, as a minimum, the altitude stratum of the sector plus:

a. 1,200 feet above the highest and below the lowest altitude or flight level of the sector where 1,000 feet vertical separation is applicable; and

b. 2,200 feet above the highest and below the lowest flight level of the sector where 2,000 feet vertical separation is applicable.

NOTE-

1. The data block, for purposes of this paragraph, must contain the Mode C altitude and call sign or beacon code at a minimum.

2. Exception to these requirements may be authorized for specific altitudes in certain ARTCC sectors if defined in appropriate facility directives and approved by the En Route and Oceanic Operations Area Director.

REFERENCE-FAAO JO 7110.65, Para 5–1–2, Alignment Accuracy Check.

5-14-6. SECTOR ELIGIBILITY

The use of the OK function is allowed to override sector eligibility only when one of the following conditions is met:

a. Prior coordination is effected.

b. The flight is within the control jurisdiction of the sector.

5-14-7. COAST TRACKS

Do not use coast tracks in the application of either radar or nonradar separation criteria.

5-14-8. CONTROLLER INITIATED COAST TRACKS

a. Initiate coast tracks only in Flight Plan Aided Tracking (FLAT) mode, except "free" coast tracking may be used as a reminder that aircraft without corresponding computer-stored flight plan information are under your control.

NOTE-

1. To ensure tracks are started in FLAT mode, perform a start track function at the aircraft's most current reported position, then immediately "force" the track into coast tracking by performing another start function with "CT" option in field 64. Making amendments to the stored route with trackball entry when the aircraft is rerouted, and repositioning the data block to coincide with the aircraft's position reports are methods of maintaining a coast track in FLAT mode.

2. *EBUS does not have the capability to initiate coast tracks.*

b. Prior to initiating a coast track, ensure that a departure message or progress report corresponding with the aircraft's current position is entered into the computer.

c. As soon as practicable after the aircraft is in radar surveillance, initiate action to cause radar tracking to begin on the aircraft.

5-14-9. ERAM COMPUTER ENTRY OF HOLD INFORMATION

a. When an aircraft is issued holding instructions, the delay is ATC initiated, and the EFC is other than "no delay expected:"

- **1.** Enter a hold message.
- 2. Maintain a paired track.

3. Enter an EFC time via a hold message, the Hold Data Menu, or the Hold View.

4. Enter non-published holding instructions via a hold message or the Hold Data Menu.

NOTE-

The ERAM hold message allows automatic calculation and reporting of aggregate delays.

b. Unless otherwise specified in a facility directive, verbally coordinate non-published holding instructions when handing off an aircraft in hold status to another ERAM sector.

c. An EFC time entered into the Hold Data Menu, Hold View, or the hold message constitutes coordination of the EFC between ERAM sectors.

REFERENCE-

FAAO JO 7210.3, Para 8-2-9, ERAM Hold Information Facility Directive Requirements

5-14-10. ERAM VISUAL INDICATOR OF SPECIAL ACTIVITY AIRSPACE (SAA) STATUS

Sector controllers shall ensure the situation display accurately reflects the status of all SAAs that impact their area of control responsibility. When "SAA DOWN" is displayed in the Outage View, manually create visual indicators on the situation display to reflect changes to airspace status.

NOTE-

The "SAA DOWN" message in the Outage View means that SAA status is no longer being updated. The status of each SAA at the time of the failure, whether "on" or "off", will continue to be displayed. Status changes will not be automatically updated on the display until the outage is resolved.

Section 7. Timed Approaches

6-7-1. APPLICATION

Timed approaches using either nonradar procedures or radar vectors to the final approach course may be used at airports served by a tower if the following conditions are met:

NOTE-

These procedures require NAVAIDs and standard/special instrument approach procedures or adequate radar coverage which permit an aircraft to:

1. Hold at a fix located on the approach course or to be radar vectored to the final approach course for a straight-in approach in accordance with the minima specified in para 6–7–5, Interval Minima.

2. Proceed in the direction of the airport along the approach course crossing the holding/approach fix at a specified altitude if required.

3. Continue descent for an approach to destination airport.

a. Direct communication is maintained with the aircraft until the pilot is instructed to contact the tower.

b. If more than one missed approach procedure is available, none require course reversal.

c. If only one missed approach procedure is available, the following conditions are met:

1. Course reversal is not required.

2. Reported ceiling and visibility are equal to or greater than the highest prescribed circling minimums for the instrument approach procedure in use.

NOTE-

Determination of whether or not an existing ceiling meets minima is accomplished by comparing MDA (MSL) with ceiling (AGL) plus the airport elevation.

REFERENCE-

FAAO JO 7110.65, Para 6-7-2, Approach Sequence.

6-7-2. APPROACH SEQUENCE

When an aircraft passes the final approach fix inbound (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker inbound (precision approach), issue clearances for a succeeding timed approach in accordance with the following:

REFERENCE-

FAAO JO 7110.65, Para 5–9–5, Approach Separation Responsibility. FAAO JO 7110.65, Para 6–7–4, Level Flight Restriction. FAAO JO 7110.65, Para 6–7–7, Missed Approaches.

a. Clear the succeeding aircraft for approach, to descend to the altitude vacated by the preceding aircraft, and to leave the final approach fix inbound (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker inbound (precision approach) at a specified time; or when using radar to sequence and position aircraft on the final approach course, vector aircraft to cross the final approach fix/outer marker or the fix used in lieu of the outer marker final approach approach with para 6–7–5, Interval Minima.

FIG 6-7-1 Timed Approach Procedures Using ILS and Longitudinal Separation Only



NOTE-

FIG 6–7–1 depicts the application of timed approach procedures using an ILS and applying longitudinal separation only. Using an interval of 2 minutes between successive approaches, the #1 and #2 aircraft have already passed the outer locator (LOM) on final approach, and the #3 aircraft has been cleared for approach and to depart the LOM 2 minutes after the #2 aircraft reported leaving the LOM inbound on final approach. After aircraft in the approach sequence depart the holding/approach fix (LOM) inbound, vertical separation is no longer provided and longitudinal separation is utilized.

REFERENCE-

FAAO JO 7110.65, Para 5–9–2, Final Approach Course Interception.

b. If an alternative missed approach procedure is not available and weather conditions are less than required by para 6-7-1, Application, subpara c, clear the succeeding aircraft for an approach when the preceding aircraft has landed or canceled its IFR flight plan.

FIG 6-7-2 Timed Approach Procedures Using a Bearing on an NDB and Longitudinal and Vertical Separation



NOTE-

FIG 6–7–2 depicts the application of timed approach procedures using a holding/approach fix on a bearing of an NDB and applying a combination of longitudinal and vertical separation. The #3 aircraft has been instructed to descend to 2,000 after the #2 aircraft has reported departing the holding/approach fix inbound and leaving 2,000 at point A. The #2 aircraft has departed the holding/approach fix inbound at the designated time, maintaining 2,000 until cleared for approach at point A. The #1 aircraft has been sighted, enabling the controller to issue approach clearance to the #2 aircraft at point A.

c. Release the aircraft to the tower before it reaches the final approach fix.

6-7-3. SEQUENCE INTERRUPTION

Interrupt the established timed approach sequence if necessary to allow an aircraft to execute a different type of approach.

6-7-4. LEVEL FLIGHT RESTRICTION

If the weather report indicates an aircraft will be in IFR conditions over the final approach fix (nonprecision approach) or the outer marker or the fix used in lieu of the outer marker (precision approach) when para 6–7–2, Approach Sequence, subpara b is

applied, clear the second aircraft for an approach early enough to allow at least 1 minute of level flight before crossing the final approach fix/outer marker or the fix used in lieu of the outer marker.

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6-7-5. INTERVAL MINIMA

a. Except as provided in Subparagraph b, use a 2-minute or a 5-mile radar interval as the minimum between successive approaches.

REFERENCE-

FAA Order JO 7110.65, Para 5–9–5, Approach Separation Responsibility. FAA Order JO 7110.65, Para 6–7–1, Application. FAA Order JO 7110.65, Para 6–7–2, Approach Sequence.

WAKE TURBULENCE APPLICATION

b. Use the following time or radar interval as the minimum interval:

- **1.** Behind super:
 - (a) Heavy 3 minutes or 6 miles.
 - (b) Large 3 minutes or 7 miles.
 - (c) Small 4 minutes or 8 miles.
- 2. Small behind heavy 3 minutes or 6 miles.

c. Increase the interval, as necessary, taking into account the:

1. Relative speeds of the aircraft concerned.

2. Existing weather conditions.

3. Distance between the approach fix and the airport.

4. Type of approach being made.

6-7-6. TIME CHECK

Issue a time check to an aircraft before specifying a time to leave the approach fix inbound unless the aircraft is vectored to the final approach course.

6-7-7. MISSED APPROACHES

a. If weather conditions are such that an aircraft will likely miss an approach, issue an alternative missed approach procedure to the next aircraft.

b. If an aircraft misses an approach, allow the next aircraft to continue the approach if it has been assigned an alternative missed approach procedure. Retain radar control or hold any remaining aircraft at assigned altitudes until traffic conditions permit the issuance of approach clearances.

c. When para 6–7–2, Approach Sequence, subpara b is applied and the first aircraft misses an approach, retain radar control or clear the second aircraft to maintain the last assigned altitude (minimum holding altitude) and return to the holding/approach fix to hold until traffic conditions permit the issuance of approach clearances.

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. Visual separation is not authorized when the lead aircraft is a super.

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 3–9–5, 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,

Section 4. Approaches

7-4-1. VISUAL APPROACH

A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually and clear of clouds to the airport of intended landing. A visual approach is not a standard instrument approach procedure and has no missed approach segment. An aircraft unable to complete a landing from a visual approach must be handled as any go–around and appropriate IFR separation must be provided until the aircraft lands or the pilot cancels their IFR flight plan.

a. At airports with an operating control tower, aircraft executing a go-around may be instructed to enter the traffic pattern for landing and an altitude assignment is not required. The pilot is expected to climb to pattern altitude and is required to maintain terrain and obstruction clearance. ATC must maintain applicable separation from other aircraft.

b. At airports without an operating control tower, aircraft executing a go-around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain separation from other IFR aircraft.

REFERENCE-

FAA Order JO 7110.65, Para 2–1–4, Operational Priority.
FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.
FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities.
FAA Order JO 7110.65, Para 7–2–1, Visual Separation.
FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways.
FAA Order JO 7210.3, Para 10–3–14, Go–around/Missed Approach.
P/CG Term – Go–around.
AIM, Para 5–4–23, Visual Approach.

7-4-2. VECTORS FOR VISUAL APPROACH

A vector for a visual approach may be initiated if the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA and the visibility is 3 miles or greater. At airports without weather reporting service there must be reasonable assurance (e.g. area weather reports, PIREPs, etc.) that descent and flight to the airport can be made visually, and the pilot must be informed that weather information is not available.

PHRASEOLOGY-

(Ident) FLY HEADING OR TURN RIGHT/LEFT HEADING (degrees) VECTOR FOR VISUAL APPROACH TO (airport name).

(If appropriate)

WEATHER NOT AVAILABLE.

NOTE-

At airports where weather information is not available, a pilot request for a visual approach indicates that descent and flight to the airport can be made visually and clear of clouds.

REFERENCE-

FAAO JO 7110.65, Para 5–9–1, Vectors to Final Approach Course. FAAO JO 7110.65, Para 7–2–1, Visual Separation. FAAO JO 7110.65, Para 7–4–3, Clearance for Visual Approach. FAAO JO 7110.65, Para 7–4–4, Approaches to Multiple Runways. FAAO JO 7110.65, Para 7–6–7, Sequencing. FAAO JO 7110.65, Para 7–7–3, Separation.

7-4-3. CLEARANCE FOR VISUAL APPROACH

ARTCCs and approach controls may clear aircraft for visual approaches using the following procedures:

NOTE-

Towers may exercise this authority when authorized by a LOA with the facility that provides the IFR service, or by a facility directive at collocated facilities.

a. Controllers may initiate, or pilots may request, a visual approach even when an aircraft is being vectored for an instrument approach and the pilot subsequently reports:

1. The airport or the runway in sight at airports with operating control towers.

2. The airport in sight at airports without a control tower.

b. Resolve potential conflicts with all other aircraft, advise an overtaking aircraft of the distance to the preceding aircraft and speed difference, and ensure that weather conditions at the airport are VFR or that the pilot has been informed that weather is not available for the destination airport. Upon pilot request, advise the pilot of the frequency to receive weather information where AWOS/ASOS is available.

PHRASEOLOGY-

(Call sign) (control instructions as required) CLEARED VISUAL APPROACH RUNWAY (number);

or

(Call sign) (control instructions as required) CLEARED VISUAL APPROACH TO (airport name)

(and if appropriate)

WEATHER NOT AVAILABLE OR VERIFY THAT YOU HAVE THE (airport) WEATHER.

REFERENCE-

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

c. Clear an aircraft for a visual approach when:

1. The aircraft is number one in the approach sequence, or

2. The aircraft is to follow a preceding aircraft and the pilot reports the preceding aircraft in sight and is instructed to follow it, or

NOTE-

The pilot need not report the airport/runway in sight.

3. The pilot reports the airport or runway in sight but not the preceding aircraft. Radar separation must be maintained until visual separation is provided.

d. All aircraft following a heavy, or a small aircraft following a B757, must be informed of the airplane manufacturer and/or model.

EXAMPLE-

"Cessna Three Four Juliet, following a Boeing 757, 12 o'clock, six miles."

or

"Cessna Three Four Juliet, following a Seven fifty seven, 12 o'clock, six miles."

REFERENCE-

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

NOTE-

Visual separation is not authorized when the lead aircraft is a super.

REFERENCE– FAAO JO 7110.65, Para 7-2-1.

e. Inform the tower of the aircraft's position prior to communications transfer at controlled airports. ARTS/STARS functions may be used provided a facility directive or LOA specifies control and communication transfer points.

f. In addition to the requirements of para 7-4-2, Vectors for Visual Approach, and subparas a, b, c, d, and e, ensure that the location of the destination airport is provided when the pilot is asked to report the destination airport in sight.

g. In those instances where airports are located in close proximity, also provide the location of the airport that may cause the confusion.

EXAMPLE-

"Cessna Five Six November, Cleveland Burke Lakefront Airport is at 12 o'clock, 5 miles. Cleveland Hopkins Airport is at 1 o'clock 12 miles. Report Cleveland Hopkins in sight."

REFERENCE-

FAAO JO 7110.65, Para 7-4-4, Approaches to Multiple Runways.

7-4-4. APPROACHES TO MULTIPLE RUNWAYS

a. All aircraft must be informed that approaches are being conducted to parallel, intersecting, or converging runways. This may be accomplished through use of the ATIS.

b. When conducting visual approaches to multiple runways ensure the following:

1. Do not permit the respective aircrafts' primary radar targets to touch unless visual separation is being applied.

2. When the aircraft flight paths intersect, ensure approved separation is maintained until visual separation is provided.

c. In addition to the requirements in para 7–2–1, Visual Separation, para 7–4–1, Visual Approach, para 7–4–2, Vectors for Visual Approach, and para 7–4–3, Clearance for Visual Approach, the following conditions apply to visual approaches being conducted simultaneously to parallel, intersecting, and converging runways, as appropriate:

1. Parallel runways separated by less than 2,500 feet. Unless approved separation is provided by ATC, an aircraft must report sighting a preceding aircraft making an approach (instrument or visual) to the adjacent parallel runway. When an aircraft reports another aircraft in sight on the adjacent final approach course and visual separation is applied, controllers must advise the succeeding aircraft to maintain visual separation. However, do not permit a super or heavy aircraft to overtake another aircraft to overtake a small aircraft.

2. Parallel runways separated by at least 2,500 feet, but less than 4,300 feet.

(a) Approved separation is provided until the aircraft are:
(1) Established on a heading or established on a direct course to a fix or cleared on an RNAV/ instrument approach procedure which will intercept the extended centerline of the runway at an angle not greater than 30 degrees, and,

(2) Issued an approach clearance and one pilot has acknowledged receipt of a visual approach clearance, and,

(3) The other pilot has acknowledged receipt of a visual or instrument approach clearance.

NOTE-

1. The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.

2. Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.

3. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.

REFERENCE-

FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."

(b) Visual approaches may be conducted to one runway while visual or instrument approaches are conducted simultaneously to other runways, provided the conditions of subpara (a) are met.

(c) Provided aircraft flight paths do not intersect, and when the provisions of subparas (a) and (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent final approach course.

3. Parallel runways separated by 4,300 feet or more.

(a) When aircraft flight paths do not intersect, visual approaches may be conducted simultaneously, provided approved separation is maintained until one of the aircraft has been issued and the pilot has acknowledged receipt of the visual approach clearance.

(b) Visual approaches may be conducted to one runway while visual or instrument approaches

are conducted simultaneously to other runways, provided the conditions of subpara (a) are met.

(c) Provided the aircraft flight paths do not intersect, when the provisions of subparas (a) and (b) are met, it is not necessary to apply any other type of separation with aircraft on the adjacent final approach course.

(d) Each aircraft must either be assigned a heading or established on a direct course to a fix or cleared on an RNAV/instrument approach procedure which will allow the aircraft to intercept the extended centerline of the runway at an angle not greater than 30 degrees.

NOTE-

1. The intent of the 30 degree intercept angle is to reduce the potential for overshoots of the extended centerline of the runway and preclude side-by-side operations with one or both aircraft in a "belly-up" configuration during the turn. Aircraft performance, speed, and the number of degrees of the turn are factors to be considered when vectoring aircraft to parallel runways.

2. Variances between heading assigned to intercept the extended centerline of the runway and aircraft ground track are expected due to the effect of wind and course corrections after completion of the turn and pilot acknowledgment of a visual approach clearance.

3. Procedures using Radius-to-Fix legs that intercept final may be used in lieu of 30-degree intercept provisions contained in this paragraph.

REFERENCE-

FAA Publication, Pilot's Handbook of Aeronautical Knowledge, Chapter 15 "Effect of Wind."

4. Intersecting and converging runways. Visual approaches may be conducted simultaneously with visual or instrument approaches to other runways, provided:

(a) Approved separation is maintained until the aircraft conducting the visual approach has been issued, and the pilot has acknowledged receipt of, the visual approach clearance.

(b) When aircraft flight paths intersect, approved separation must be maintained until visual separation is provided.

NOTE-

Although simultaneous approaches may be conducted to intersecting runways, staggered approaches may be necessary to meet the airport separation requirements specified in Para 3–10–4, Intersecting Runway/Intersecting Flight Path Separation. REFERENCE-

FAAO 7110.79, Charted Visual Flight Procedures. FAAO JO 7110.65, Para 7–4–5, Charted Visual Flight Procedures (CVFP). USA/USN Not Applicable. FAAO JO 7110.65, Para 7–7–3, Separation.

7–4–5. CHARTED VISUAL FLIGHT PROCEDURES (CVFP). USA/USN NOT APPLICABLE

Clear an aircraft for a CVFP only when the following conditions are met:

a. There is an operating control tower.

b. The published name of the CVFP and the landing runway are specified in the approach clearance, the reported ceiling at the airport of intended landing is at least 500 feet above the MVA/MIA, and the visibility is 3 miles or more, unless higher minimums are published for the particular CVFP.

c. When using parallel or intersecting/converging runways, the criteria specified in Para 7–4–4, Approaches to Multiple Runways, are applied.

d. An aircraft not following another aircraft on the approach reports sighting a charted visual landmark, or reports sighting a preceding aircraft landing on the same runway and has been instructed to follow that aircraft.

PHRASEOLOGY-

(Ident) CLEARED (name of CVFP) APPROACH.

7-4-6. CONTACT APPROACH

Clear an aircraft for a contact approach only if the following conditions are met:

a. The pilot has requested it.

NOTE-

When executing a contact approach, the pilot is responsible for maintaining the required flight visibility, cloud clearance, and terrain/obstruction clearance. Unless otherwise restricted, the pilot may find it necessary to descend, climb, and/or fly a circuitous route to the airport to maintain cloud clearance and/or terrain/ obstruction clearance. It is not in any way intended that controllers will initiate or suggest a contact approach to a pilot.

b. The reported ground visibility is at least 1 statute mile.

c. A standard or special instrument approach procedure has been published and is functioning for the airport of intended landing.

d. Approved separation is applied between aircraft so cleared and other IFR or SVFR aircraft. When applying vertical separation, do not assign a fixed altitude but clear the aircraft at or below an altitude which is at least 1,000 feet below any IFR traffic but not below the minimum safe altitude prescribed in 14 CFR Section 91.119.

NOTE-

14 CFR Section 91.119 specifies the minimum safe altitude to be flown:

(a) Anywhere.

(b) Over congested areas.

(c) Other than congested areas. To provide for an emergency landing in the event of power failure and without undue hazard to persons or property on the surface.

(d) Helicopters. May be operated at less than the minimums prescribed in paras (b) and (c) above if the operation is conducted without hazard to persons or property on the surface.

e. An alternative clearance is issued when weather conditions are such that a contact approach may be impracticable.

PHRASEOLOGY-

CLEARED CONTACT APPROACH,

And if required, AT OR BELOW (altitude) (routing).

IF NOT POSSIBLE, (alternative procedures), AND ADVISE.

Section 7. North Atlantic ICAO Region

8-7-1. APPLICATION

Provide air traffic control services in the North Atlantic ICAO Region with the procedures and minima contained in this section except when noted otherwise.

8-7-2. VERTICAL SEPARATION

Provide vertical separation in accordance with Chapter 4, IFR, Section 5, Altitude Assignment and Verification.

8-7-3. LONGITUDINAL SEPARATION

In accordance with Chapter 8, Offshore/Oceanic Procedures, Section 3, Longitudinal Separation, apply the following:

a. Supersonic flight:

1. 10 minutes provided that:

(a) both aircraft are in level flight at the same Mach number or the aircraft are of the same type and are both operating in cruise climb, and one of the following;

(1) The aircraft concerned have reported over a common point; or,

(2) If the aircraft have not reported over a common point, the appropriate time interval being applied between aircraft exists and will exist at the common point; or,

(3) If a common point does not exist, the appropriate time interval being applied between aircraft exists and will exist at significant points along each track.

2. *15 minutes* between aircraft in supersonic flight not covered in subpara a1 above.

b. Turbojet operations (*subsonic flight*):

1. Apply the prescribed minima in accordance with para 8–3–3, Mach Number Technique; or

2. Where tracks diverge from the common point and the following aircraft is maintaining a greater Mach Number than the preceding aircraft:

(a) At least *10 minutes* longitudinal separation exists at the point where the tracks diverge; and

(b) At least 5 *minutes* longitudinal separation will exist where minimum lateral separation is achieved (*whichever is estimated to occur first*);

(1) At or before the next significant point (normally within ten degrees of longitude along track(s)), or

(2) Within 90 minutes of the time the following aircraft passes the common point, or

(3) Within 600 NM of the common point.

3. Apply *15 minutes* between all other turbojet aircraft.

c. Nonturbojet operations:

1. Apply 20 *minutes* between aircraft operating in the West Atlantic Route System (WATRS), or

2. Apply *30 minutes* between aircraft operating outside of the WATRS.

NOTE-

The WATRS area is defined as beginning at a point 27°00'N/77°00'W direct to 20°00'N/67°00'W direct to 18°00'N/62°00'W direct to 18°00'N/60°00'W direct to 38°30'N/60°00'W direct to 38°30'N/69°15'W, thence counterclockwise along the New York Oceanic CTA/FIR boundary to the Miami Oceanic CTA/FIR boundary, thence southbound along the Miami Oceanic CTA/FIR boundary to the point of beginning.

d. Clear an aircraft for an ADS-B In Trail Procedure (ITP) climb or descent provided the following conditions are satisfied:

1. The ITP climb or descent has been requested by the pilot;

2. The aircraft identification of each reference aircraft in the ITP request exactly matches the Item 7 - aircraft identification of the corresponding aircraft's filed flight plan;

3. The reported ITP distance between the ITP aircraft and any reference aircraft is 15 NM or more;

4. Both the ITP aircraft and reference aircraft are either on:

(a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that reduce 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;

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 reduce 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;

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 reduce 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);

Minima	RNP	Maximum ADS-C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	14 minutes

TBL 8–9–1 ADS–C Criteria

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.

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 reduce 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).

Minima	RNP	Maximum ADS–C Periodic Reporting Interval
50 NM	10	27 minutes
50 NM	4	32 minutes
30 NM	4	10 minutes

TBL 8-10-1 ADS-C Criteria

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.

hazardous material contamination). Honor inflight clearance requests for altitude and route changes to the maximum extent possible. Other IFR aircraft may be recleared so that requests by SAMPLER aircraft are honored. Separation standards as outlined in this order must be applied in all cases.

REFERENCE-

FAAO JO 7110.65, Para 2–1–4, Operational Priority. FAAO JO 7110.65, Para 2–4–20, Aircraft Identification. FAAO JO 7610.4, Para 4–4–4, Avoidance of Hazardous Radiation Areas.

9-2-18. AWACS/NORAD SPECIAL FLIGHTS

Do not delay E–3 AWACS aircraft identified as "AWACS/NORAD Special" flights. The following control actions are acceptable while expediting these aircraft to the destination orbit.

a. En route altitude changes $^+/-2,000$ feet from the requested flight level.

b. Radar vectors or minor route changes that do not impede progress towards the destination orbit.

NOTE-

NORAD has a requirement to position E-3 AWACS aircraft at selected locations on a time-critical basis. To the extent possible these flights will utilize routes to the destination orbit that have been precoordinated with the impacted ATC facilities. To identify these flights, the words "AWACS/ NORAD SPECIAL" will be included as the first item in the remarks section of the flight plan.

9–2–19. WEATHER RECONNAISSANCE FLIGHTS

TEAL and NOAA mission aircraft fly reconnaissance flights to gather meteorological data on winter storms, (NWSOP missions), hurricanes and tropical cyclones (NHOP missions). The routes and timing of these flights are determined by movement of the storm areas and not by traffic flows.

a. When a dropsonde release time is received from a TEAL or NOAA mission aircraft, workload and priorities permitting, controllers must advise the mission aircraft of any traffic estimated to pass through the area of the drop at altitudes below that of the mission aircraft. This traffic advisory must include:

- 1. Altitude.
- **2.** Direction of flight.

3. ETA at the point closest to drop area (or at the fix/intersection where drop will occur).

NOTE-

A dropsonde is a 14-inch long cardboard cylinder about 2.75 inches in diameter, that weighs approximately 14 ounces (400 grams), and has a parachute attached. When released from the aircraft it will fall at a rate of approximately 2,500 feet per minute. Controllers should recognize that a dropsonde released at FL 310 will be a factor for traffic at FL 210 four minutes later. It is the aircraft commanders responsibility to delay release of dropsondes if traffic is a factor. Aircraft commanders will delay release of dropsondes based solely upon traffic as issued by ATC.

b. When advised that an airborne TEAL or NOAA aircraft is requesting a clearance via CARCAH, issue the clearance in accordance with Chapter 4, IFR, Section 2, Clearances.

REFERENCE-

FAAO JO 7110.65, Para 4–2–1, Clearance Items. FAAO JO 7110.65, Para 4–2–2, Clearance Prefix. FAAO JO 7110.65, Para 4–2–3, Delivery Instructions.

c. If a TEAL or NOAA mission aircraft must be contacted but is out of VHF, UHF, and HF radio range, advise the supervisory traffic management coordinator–in–charge.

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REFERENCE-
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FAAO JO 7210.3, Para 5–3–6, Weather Reconnaissance Flights. FAAO JO 7110.65, Para 2–1–4, Operational Priority.

9-2-20. EVASIVE ACTION MANEUVER

Approve a pilot request to conduct an evasive action maneuver only on the basis of a permissible traffic situation. Specify the following items, as necessary, when issuing approval:

NOTE-

The "evasive action" maneuver is performed by a bomber/fighter bomber aircraft at or above FL 250 along a 60 NM long segment of the flight plan route overlying a RBS or other site and includes:

1. Flying a zigzag pattern on both the left and right side of the flight plan route centerline. Altitude deviations are made in conjunction with the lateral maneuvering.

2. Lateral deviations from the route centerline will not normally exceed 12 miles. Altitude variations must not exceed plus or minus 1,000 feet of the assigned flight level; i.e., confined within a 2,000 foot block.

a. Specific route segment on which the maneuver will take place.

b. Distance of maximum route deviation from the centerline in miles.

c. Altitude.

PHRASEOLOGY-

CLEARED TO CONDUCT EVASIVE ACTION MANEUVER FROM (fix) TO (fix),

and

(number of miles) EITHER SIDE OF CENTERLINE,

and

MAINTAIN (altitude) THROUGH (altitude),

and

COMPLETE MANEUVER AT (fix) AT (altitude).

9-2-21. NONSTANDARD FORMATION/ CELL OPERATIONS

Occasionally the military is required to operate in a nonstandard cell formation and controllers should be knowledgeable of the various tactics employed and the procedures used.

REFERENCE-

FAA Order JO 7610.4, Chapter 12, Section 11, Formation Flight.

a. Formation leaders are responsible for obtaining ATC approval to conduct nonstandard formation/cell operations.

b. When nonstandard formation/cell operations have been approved, controllers must assign sufficient altitudes to allow intra-cell vertical spacing of 500 feet between each aircraft in the formation.

c. Control nonstandard formation/cell operations on the basis that MARSA is applicable between the participating aircraft until they establish approved separation which is acknowledged by ATC.

d. Apply approved separation criteria between the approved nonstandard formation/cell envelope and nonparticipating aircraft.

e. Clear aircraft operating in a nonstandard formation/cell to the breakup fix as the clearance limit. Forward data pertaining to route or altitude beyond the breakup point to the center concerned as a part of the routine flight plan information.

f. *EN ROUTE*. If the breakup occurs in your area, issue appropriate clearances to authorize transition from formation to individual routes or altitudes. If a breakup cannot be approved, issue an appropriate clearance for the flight to continue as a formation.

9-2-22. OPEN SKIES TREATY AIRCRAFT

a. OPEN SKIES aircraft will be identified by the call sign "OSY" (OPEN SKIES) followed by the flight number and a one-letter mission suffix.

EXAMPLE-

OSY123D Mission suffixes: *F = Observation Flights (Priority). *D = Demonstration Flights (Priority). *T = Transit Flights (Nonpriority). NOTE-

1. Observation/Demonstration flights are conducted under rigid guidelines outlined in the Treaty of OPEN SKIES that govern sensor usage, maximum flight distances, altitudes and priorities.

2. Transit flights are for the sole purpose of moving an OPEN SKIES aircraft from airport to airport in preparation for an actual OPEN SKIES "F" or "D" mission.

b. Provide priority and special handling to expedite the movement of an OPEN SKIES observation or demonstration flight.

REFERENCE-

FAA Order JO 7110.65, Para 2–1–4, Operational Priority, subpara n. FAA Order JO 7210.3, Para 5–3–7, OPEN SKIES Treaty Aircraft. Treaty on OPEN SKIES, Treaty Document, 102–37.

c. OPEN SKIES (F and D) Treaty aircraft, while maintaining compliance with ATC procedures, must have priority over activities in special use airspace (SUA) and must be allowed to transit such airspace as filed after appropriate and timely coordination has been accomplished between the using agency and controlling agency. A letter of agreement is required between the using agency and the controlling agency for Open Skies F and D aircraft to transit active SUA. When Open Skies F and D aircraft transit SUA, an ATC facility must provide approved separation services at all times.

REFERENCE-

FAA Order JO 7110.65, Para 9-3-4 Transiting Active SUA/ATCAA

1. F and D Treaty flights transiting SUA will be handled in the following manner:

(a) The ATC facility controlling the F and D Treaty flight must advise the using/scheduling

Appendix B. Standard Operating Practice (SOP) for Aircraft Deviating for Weather Near Active Special Activity Airspace (SAA)

The procedures listed below must be applied and contained in a facility SOP when aircraft deviate into and/or near an active or scheduled SAA:

1. PURPOSE

This appendix prescribes the method and step-bystep process for handling aircraft deviations for weather near active Special Activity Airspace (SAA). The procedures are intended to work in parallel to the preventive procedures outlined in FAA Order JO 7210.3, Facility Operation and Administration, Para 17–2–4a.9, which must be applied when weather is scheduled to impact an active or scheduled SAA.

2. DISCUSSION

a. In all operational facilities, the increase in traffic density and the need for the expeditious movement of traffic without compromising safety have emphasized the importance of handling aircraft deviations for weather in the vicinity of active SAA.

b. The methods, and practices used for handling aircraft requesting or initiating deviations off of their filed route due to weather require time critical responses to the request or in response to observed course deviations. Major issues can occur whenever there is a heavy reliance upon reactive control actions when not performed according to this handbook and the procedures outlined in FAA Order JO 7210.3.

c. Course deviations in areas near active SAA's increase the workload for specialists at the time of their request or observation. The intent of this SOP is to make the handling of the requested deviation or to correct the observed course deviation take place smoothly and to ensure a safe operation with a minimum amount of workload.

3. TERMS

The following terms are important for a complete understanding of this SOP:

a. Status Information Area (SIA). Manual or automatic displays of the current status of position related equipment and operational conditions or procedures.

b. Special Activity Airspace (SAA). Airspace of defined dimensions as an Alert Area, Controlled Firing Area, Military Operations Area (MOA), Prohibited Area, Restricted Area or Warning Area.

c. Deviations. A departure from a current clearance, such as an off course maneuvers to avoid weather or turbulence.

d. Using Agency. The using agency is the military unit or other organization whose activity established the requirement for the SAA. The using agency is responsible for ensuring that:

1. The airspace is used only for its designated purpose.

2. Proper scheduling procedures are established and utilized.

3. The controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day.

4. A point of contact is made available to enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.

5. An ATC facility may be designated as the using agency for joint–use areas when that facility has been granted priority for use of the airspace in a joint–use letter of procedure or letter of agreement.

4. PRECAUTIONS

a. Unless clearance of nonparticipating aircraft in/through/adjacent to an active SAA is provided for in a Letter of Agreement or Letter of Procedure, any clearance issued to a nonparticipating aircraft must ensure separation from that SAA by the appropriate minima specified in paragraph 9-3-2.

b. The specialist receiving a request for a route deviation in the vicinity of an active SAA cannot issue a clearance into the active SAA airspace, unless the provisions of Paragraph 9–3–4 of this handbook are applied. The FAA has no jurisdictional authority over the use of non-joint use prohibited/restricted/warning area airspace; therefore, clearance cannot be issued for flight therein without appropriate approval.

c. If the specialist is able to coordinate approval for entry into the SAA from the using agency, a clearance to the aircraft complying with the provisions coordinated with the using agency can be issued; the specialist must notify the FLM/CIC of this situation and of subsequent requests or deviations from other aircraft in the same area.

d. Use of Code 7700 for aircraft deviations into active SAA is not encouraged, particularly in situations involving multiple aircraft. Positive identification of aircraft may be lost if an aircraft deviates from flight plan track, particularly in the event of a momentary loss of radar or other interruption in tracking.

5. **RESPONSIBILITY:**

If a deviation occurs that causes an aircraft to enter SAA the air traffic team must follow the procedures outlined below:

a. Attempt the following:

1. Handoff the aircraft to the Using Agency and transfer communications; or

2. Point Out the aircraft to the Using Agency. The controller must:

(a) Continue to provide safety alerts and traffic advisories, as appropriate, to the affected aircraft.

(b) Continue to coordinate with the Using Agency until the situation is resolved.

(c) Assist the aircraft in exiting the SAA.

3. If the handoff or point out is unsuccessful, the controller must:

(a) If able, advise the Using Agency of the pilot's actions.

(b) Provide safety alerts and traffic advisories, as appropriate.

(c) Assist the aircraft in exiting the SAA as quickly as the weather allows.

(d) Continue to coordinate with the Using Agency until the situation is resolved.

4. If no approval to enter the SAA is given by the using agency:

(a) The specialist must advise the aircraft requesting the course deviation, or deviating toward the SAA, the status of the SAA, and that no clearance can be issued permitting entry into the airspace or;

(b) If an alternative course, which remains clear of the active SAA, is available, offer it to the pilot of the aircraft in question.

5. If the pilot of the nonparticipating aircraft exercises their discretion to deviate from that clearance which ensures separation from an active SAA, and the track of the aircraft will not maintain the required minima from an active SAA, controllers must ascertain if the pilot is exercising emergency authority:

(a) If so, provide assistance and obtain information as provided in Chapter 10, Emergencies.

(b) If not, provide appropriate pilot deviation notification as specified in Paragraph 2-1-26, Pilot Deviation Notification.

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: ATS SURVEILLANCE SERVICE [ICAO] ATS SURVEILLANCE SYSTEM [ICAO] BUFFER AREA FLIGHT TERMINATION IDENTIFICATION [ICAO] LOST LINK LOST LINK PROECDURE PROCEDURAL CONTROL [ICAO] PROCEDURAL SEPARATION [ICAO]
- e. Terms Deleted: FLIGHT MANAGEMENT SYSTEM PROCEDURE (FMSP) NONRADAR SEPARATION [ICAO] RADAR IDENTIFICATION

f. Terms Modified: AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC) AIRPORT SURFACE DETECTION EQUIPMENT (ASDE) ALONG-TRACK DISTANCE (ATD) SAFETY LOGIC SYSTEM TEMPORARY FLIGHT RESTRICTION (TFR)

g. Editorial/format changes were made where necessary. Revision bars were not used due to the insignificant nature of the changes.

procedures forbid compliance with the clearance issued. Pilots may also request clarification or amendment, as appropriate, any time a clearance is not fully understood, or considered unacceptable because of safety of flight. Controllers should, in such instances and to the extent of operational practicality and safety, honor the pilot's request. 14 CFR Part 91.3(a) states: "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." THE PILOT IS RESPONSIBLE TO REQUEST AN AMENDED CLEARANCE if ATC issues a clearance that would cause a pilot to deviate from a rule or regulation, or in the pilot's opinion, would place the aircraft in jeopardy.

(See ATC INSTRUCTIONS.) (See ICAO term AIR TRAFFIC CONTROL CLEARANCE.)

AIR TRAFFIC CONTROL- A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

(See ICAO term AIR TRAFFIC CONTROL SERVICE.)

AIR TRAFFIC CONTROL CLEARANCE [ICAO]– Authorization for an aircraft to proceed under conditions specified by an air traffic control unit.

Note 1: For convenience, the term air traffic control clearance is frequently abbreviated to clearance when used in appropriate contexts.

Note 2: The abbreviated term clearance may be prefixed by the words taxi, takeoff, departure, en route, approach or landing to indicate the particular portion of flight to which the air traffic control clearance relates.

AIR TRAFFIC CONTROL SERVICE– (See AIR TRAFFIC CONTROL.)

AIR TRAFFIC CONTROL SERVICE [ICAO]- A service provided for the purpose of:

a. Preventing collisions:

1. Between aircraft; and

2. On the maneuvering area between aircraft and obstructions.

b. Expediting and maintaining an orderly flow of air traffic.

AIR TRAFFIC CONTROL SPECIALIST- A person

authorized to provide air traffic control service. (See AIR TRAFFIC CONTROL.) (See FLIGHT SERVICE STATION.) (See ICAO term CONTROLLER.)

AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER (ATCSCC) – An Air Traffic Tactical Operations facility responsible for monitoring and managing the flow of air traffic throughout the NAS, producing a safe, orderly, and expeditious flow of traffic while minimizing delays. The following functions are located at the ATCSCC:

a. Central Altitude Reservation Function (CARF). Responsible for coordinating, planning, and approving special user requirements under the Altitude Reservation (ALTRV) concept.

(See ALTITUDE RESERVATION.)

b. Airport Reservation Office (ARO). Monitors the operation and allocation of reservations for unscheduled operations at airports designated by the Administrator as High Density Airports. These airports are generally known as slot controlled airports. The ARO allocates reservations on a first come, first served basis determined by the time the request is received at the ARO.

(Refer to 14 CFR Part 93.)

(See CHART SUPPLEMENT U.S.)

c. U.S. Notice to Airmen (NOTAM) Office. Responsible for collecting, maintaining, and distributing NOTAMs for the U.S. civilian and military, as well as international aviation communities.

(See NOTICE TO AIRMEN.)

d. Weather Unit. Monitor all aspects of weather for the U.S. that might affect aviation including cloud cover, visibility, winds, precipitation, thunderstorms, icing, turbulence, and more. Provide forecasts based on observations and on discussions with meteorologists from various National Weather Service offices, FAA facilities, airlines, and private weather services.

AIR TRAFFIC SERVICE- A generic term meaning:

a. Flight Information Service.

b. Alerting Service.

c. Air Traffic Advisory Service.

d. Air Traffic Control Service:

1. Area Control Service,

2. Approach Control Service, or

3. Airport Control Service.

AIR TRAFFIC SERVICE (ATS) ROUTES – The term "ATS Route" is a generic term that includes

"VOR Federal airways," "colored Federal airways," "jet routes," and "RNAV routes." The term "ATS route" does not replace these more familiar route names, but serves only as an overall title when listing the types of routes that comprise the United States route structure.

AIRBORNE– An aircraft is considered airborne when all parts of the aircraft are off the ground.

AIRBORNE DELAY- Amount of delay to be encountered in airborne holding.

AIRCRAFT– Device(s) that are used or intended to be used for flight in the air, and when used in air traffic control terminology, may include the flight crew.

(See ICAO term AIRCRAFT.)

AIRCRAFT [ICAO] – Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

AIRCRAFT APPROACH CATEGORY- A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft must fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the category for that speed must be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, must use the approach Category B minimums when circling to land. The categories are as follows:

a. Category A– Speed less than 91 knots.

b. Category B– Speed 91 knots or more but less than 121 knots.

c. Category C– Speed 121 knots or more but less than 141 knots.

d. Category D– Speed 141 knots or more but less than 166 knots.

e. Category E– Speed 166 knots or more. (Refer to 14 CFR Part 97.)

AIRCRAFT CLASSES– For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Super, Heavy, Large, and Small as follows:

a. Super. The Airbus A-380-800 (A388) and the Antonov An-225 (A225) are classified as super.

b. Heavy– Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are

operating at this weight during a particular phase of flight.

c. Large– Aircraft of more than 41,000 pounds, maximum certificated takeoff weight, up to but not including 300,000 pounds.

d. Small– Aircraft of 41,000 pounds or less maximum certificated takeoff weight.

(Refer to AIM.)

AIRCRAFT CONFLICT– Predicted conflict, within EDST of two aircraft, or between aircraft and airspace. A Red alert is used for conflicts when the predicted minimum separation is 5 nautical miles or less. A Yellow alert is used when the predicted minimum separation is between 5 and approximately 12 nautical miles. A Blue alert is used for conflicts between an aircraft and predefined airspace.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT LIST (ACL)– A view available with EDST that lists aircraft currently in or predicted to be in a particular sector's airspace. The view contains textual flight data information in line format and may be sorted into various orders based on the specific needs of the sector team.

(See EN ROUTE DECISION SUPPORT TOOL.)

AIRCRAFT SURGE LAUNCH AND RECOVERY– Procedures used at USAF bases to provide increased launch and recovery rates in instrument flight rules conditions. ASLAR is based on:

a. Reduced separation between aircraft which is based on time or distance. Standard arrival separation applies between participants including multiple flights until the DRAG point. The DRAG point is a published location on an ASLAR approach where aircraft landing second in a formation slows to a predetermined airspeed. The DRAG point is the reference point at which MARSA applies as expanding elements effect separation within a flight or between subsequent participating flights.

b. ASLAR procedures shall be covered in a Letter of Agreement between the responsible USAF military ATC facility and the concerned Federal Aviation Administration facility. Initial Approach Fix spacing requirements are normally addressed as a minimum.

AIRMEN'S METEOROLOGICAL INFORMATION-(See AIRMET.)

AIRMET- In-flight weather advisories issued only to amend the area forecast concerning weather phenomena which are of operational interest to all aircraft and potentially hazardous to aircraft having limited capability because of lack of equipment, instrumentation, or pilot qualifications. AIRMETs concern weather of less severity than that covered by SIGMETs or Convective SIGMETs. AIRMETs cover moderate icing, moderate turbulence, sustained winds of 30 knots or more at the surface, widespread areas of ceilings less than 1,000 feet and/or visibility less than 3 miles, and extensive mountain obscurement.

(See AWW.) (See CONVECTIVE SIGMET.) (See CWA.) (See SIGMET.) (Refer to AIM.)

AIRPORT- An area on land or water that is used or intended to be used for the landing and takeoff of aircraft and includes its buildings and facilities, if any.

AIRPORT ADVISORY AREA– The area within ten miles of an airport without a control tower or where the tower is not in operation, and on which a Flight Service Station is located.

(See LOCAL AIRPORT ADVISORY.) (Refer to AIM.)

AIRPORT ARRIVAL RATE (AAR)– A dynamic input parameter specifying the number of arriving aircraft which an airport or airspace can accept from the ARTCC per hour. The AAR is used to calculate the desired interval between successive arrival aircraft.

AIRPORT DEPARTURE RATE (ADR)– A dynamic parameter specifying the number of aircraft which can depart an airport and the airspace can accept per hour.

AIRPORT ELEVATION – The highest point of an airport's usable runways measured in feet from mean sea level.

(See TOUCHDOWN ZONE ELEVATION.) (See ICAO term AERODROME ELEVATION.) AIRPORT LIGHTING– Various lighting aids that may be installed on an airport. Types of airport lighting include:

a. Approach Light System (ALS)– An airport lighting facility which provides visual guidance to landing aircraft by radiating light beams in a directional pattern by which the pilot aligns the aircraft with the extended centerline of the runway on his/her final approach for landing. Condenser-Discharge Sequential Flashing Lights/Sequenced Flashing Lights may be installed in conjunction with the ALS at some airports. Types of Approach Light Systems are:

1. ALSF-1– Approach Light System with Sequenced Flashing Lights in ILS Cat-I configuration.

2. ALSF-2– Approach Light System with Sequenced Flashing Lights in ILS Cat-II configuration. The ALSF-2 may operate as an SSALR when weather conditions permit.

3. SSALF– Simplified Short Approach Light System with Sequenced Flashing Lights.

4. SSALR– Simplified Short Approach Light System with Runway Alignment Indicator Lights.

5. MALSF– Medium Intensity Approach Light System with Sequenced Flashing Lights.

6. MALSR– Medium Intensity Approach Light System with Runway Alignment Indicator Lights.

7. RLLS- Runway Lead-in Light System Consists of one or more series of flashing lights installed at or near ground level that provides positive visual guidance along an approach path, either curving or straight, where special problems exist with hazardous terrain, obstructions, or noise abatement procedures.

8. RAIL– Runway Alignment Indicator Lights– Sequenced Flashing Lights which are installed only in combination with other light systems.

9. ODALS- Omnidirectional Approach Lighting System consists of seven omnidirectional flashing lights located in the approach area of a nonprecision runway. Five lights are located on the runway centerline extended with the first light located 300 feet from the threshold and extending at equal intervals up to 1,500 feet from the threshold. The other two lights are located, one on each side of the runway threshold, at a lateral distance of 40 feet from the runway edge, or 75 feet from the runway

edge when installed on a runway equipped with a VASI.

(Refer to FAAO JO 6850.2, VISUAL GUIDANCE LIGHTING SYSTEMS.)

b. Runway Lights/Runway Edge Lights– Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway lights are uniformly spaced at intervals of approximately 200 feet, and the intensity may be controlled or preset.

c. Touchdown Zone Lighting– Two rows of transverse light bars located symmetrically about the runway centerline normally at 100 foot intervals. The basic system extends 3,000 feet along the runway.

d. Runway Centerline Lighting– Flush centerline lights spaced at 50-foot intervals beginning 75 feet from the landing threshold and extending to within 75 feet of the opposite end of the runway.

e. Threshold Lights– Fixed green lights arranged symmetrically left and right of the runway centerline, identifying the runway threshold.

f. Runway End Identifier Lights (REIL)– Two synchronized flashing lights, one on each side of the runway threshold, which provide rapid and positive identification of the approach end of a particular runway.

g. Visual Approach Slope Indicator (VASI)– An airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused light beams which indicate to the pilot that he/she is "on path" if he/she sees red/white, "above path" if white/white, and "below path" if red/red. Some airports serving large aircraft have three-bar VASIs which provide two visual glide paths to the same runway.

h. Precision Approach Path Indicator (PAPI)– An airport lighting facility, similar to VASI, providing vertical approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights, normally installed on the left side of the runway, and have an effective visual range of about 5 miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high intensity red and white focused light beams which indicate that the pilot is "on path" if the pilot sees an equal number of white lights and red lights, with white to the left of the red; "above path" if the pilot sees more white than red lights.

i. Boundary Lights – Lights defining the perimeter of an airport or landing area.

(Refer to AIM.)

AIRPORT MARKING AIDS- Markings used on runway and taxiway surfaces to identify a specific runway, a runway threshold, a centerline, a hold line, etc. A runway should be marked in accordance with its present usage such as:

a. Visual.

b. Nonprecision instrument.

c. Precision instrument.

(Refer to AIM.)

AIRPORT REFERENCE POINT (ARP)- The approximate geometric center of all usable runway surfaces.

AIRPORT RESERVATION OFFICE- Office responsible for monitoring the operation of slot controlled airports. It receives and processes requests for unscheduled operations at slot controlled airports.

AIRPORT ROTATING BEACON- A visual NAVAID operated at many airports. At civil airports, alternating white and green flashes indicate the location of the airport. At military airports, the beacons flash alternately white and green, but are differentiated from civil beacons by dualpeaked (two quick) white flashes between the green flashes.

(See INSTRUMENT FLIGHT RULES.) (See SPECIAL VFR OPERATIONS.) (See ICAO term AERODROME BEACON.) (Refer to AIM.)

AIRPORT STREAM FILTER (ASF)– An on/off filter that allows the conflict notification function to be inhibited for arrival streams into single or multiple airports to prevent nuisance alerts.

AIRPORT SURFACE DETECTION EQUIPMENT (ASDE)– Surveillance equipment specifically designed to detect aircraft, vehicular traffic, and other objects, on the surface of an airport, and to present the image on a tower display. Used to augment visual observation by tower personnel of aircraft and/or vehicular movements on runways and taxiways. There are three ASDE systems deployed in the NAS:

a. ASDE–3– a Surface Movement Radar.

b. ASDE-X- a system that uses an X-band Surface Movement Radar, multilateration and ADS-B.

c. Airport Surface Surveillance Capability (ASSC)–a system that uses Surface Movement Radar, multilateration and ADS–B.

AIRPORT SURVEILLANCE RADAR– Approach control radar used to detect and display an aircraft's position in the terminal area. ASR provides range and azimuth information but does not provide elevation data. Coverage of the ASR can extend up to 60 miles.

AIRPORT TAXI CHARTS-(See AERONAUTICAL CHART.)

AIRPORT TRAFFIC CONTROL SERVICE- A service provided by a control tower for aircraft operating on the movement area and in the vicinity of an airport.

(See MOVEMENT AREA.) (See TOWER.) (See ICAO term AERODROME CONTROL SERVICE.)

AIRPORT TRAFFIC CONTROL TOWER-(See TOWER.)

AIRSPACE CONFLICT- Predicted conflict of an aircraft and active Special Activity Airspace (SAA).

AIRSPACE FLOW PROGRAM (AFP)– AFP is a Traffic Management (TM) process administered by the Air Traffic Control System Command Center (ATCSCC) where aircraft are assigned an Expect Departure Clearance Time (EDCT) in order to manage capacity and demand for a specific area of the National Airspace System (NAS). The purpose of the program is to mitigate the effects of en route constraints. It is a flexible program and may be implemented in various forms depending upon the needs of the air traffic system.

AIRSPACE HIERARCHY– Within the airspace classes, there is a hierarchy and, in the event of an overlap of airspace: Class A preempts Class B, Class B preempts Class C, Class C preempts Class D, Class D preempts Class E, and Class E preempts Class G.

AIRSPEED- The speed of an aircraft relative to its surrounding air mass. The unqualified term "airspeed" means one of the following:

a. Indicated Airspeed– The speed shown on the aircraft airspeed indicator. This is the speed used in pilot/controller communications under the general term "airspeed."

(Refer to 14 CFR Part 1.)

b. True Airspeed– The airspeed of an aircraft relative to undisturbed air. Used primarily in flight planning and en route portion of flight. When used in

pilot/controller communications, it is referred to as "true airspeed" and not shortened to "airspeed."

AIRSTART– The starting of an aircraft engine while the aircraft is airborne, preceded by engine shutdown during training flights or by actual engine failure.

AIRWAY– A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids.

(See FEDERAL AIRWAYS.) (See ICAO term AIRWAY.) (Refer to 14 CFR Part 71.) (Refer to AIM.)

AIRWAY [ICAO] – A control area or portion thereof established in the form of corridor equipped with radio navigational aids.

AIRWAY BEACON– Used to mark airway segments in remote mountain areas. The light flashes Morse Code to identify the beacon site.

(Refer to AIM.)

AIT-

(See AUTOMATED INFORMATION TRANSFER.)

ALERFA (Alert Phase) [ICAO]– A situation wherein apprehension exists as to the safety of an aircraft and its occupants.

ALERT- A notification to a position that there is an aircraft-to-aircraft or aircraft-to-airspace conflict, as detected by Automated Problem Detection (APD).

ALERT AREA-

(See SPECIAL USE AIRSPACE.)

ALERT NOTICE- A request originated by a flight service station (FSS) or an air route traffic control center (ARTCC) for an extensive communication search for overdue, unreported, or missing aircraft.

ALERTING SERVICE- A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and assist such organizations as required.

ALNOT-

(See ALERT NOTICE.)

ALONG-TRACK DISTANCE (ATD)- The horizontal distance between the aircraft's current position and a fix measured by an area navigation system that is not subject to slant range errors. ALPHANUMERIC DISPLAY– Letters and numerals used to show identification, altitude, beacon code, and other information concerning a target on a radar display.

(See AUTOMATED RADAR TERMINAL SYSTEMS.)

ALTERNATE AERODROME [ICAO]– An aerodrome to which an aircraft may proceed when it becomes either impossible or inadvisable to proceed to or to land at the aerodrome of intended landing.

Note: The aerodrome from which a flight departs may also be an en-route or a destination alternate aerodrome for the flight.

ALTERNATE AIRPORT– An airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.

(See ICAO term ALTERNATE AERODROME.)

ALTIMETER SETTING– The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92).

(Refer to 14 CFR Part 91.) (Refer to AIM.)

ALTITUDE- The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

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(See FLIGHT LEVEL.)
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a. MSL Altitude – Altitude expressed in feet measured from mean sea level.

b. AGL Altitude – Altitude expressed in feet measured above ground level.

c. Indicated Altitude– The altitude as shown by an altimeter. On a pressure or barometric altimeter it is altitude as shown uncorrected for instrument error and uncompensated for variation from standard atmospheric conditions.

(See ICAO term ALTITUDE.)

ALTITUDE [ICAO] – The vertical distance of a level, a point or an object considered as a point, measured from mean sea level (MSL).

ALTITUDE READOUT – An aircraft's altitude, transmitted via the Mode C transponder feature, that

is visually displayed in 100-foot increments on a radar scope having readout capability.

(See ALPHANUMERIC DISPLAY.) (See AUTOMATED RADAR TERMINAL SYSTEMS.) (Refer to AIM.)

ALTITUDE RESERVATION- Airspace utilization under prescribed conditions normally employed for the mass movement of aircraft or other special user requirements which cannot otherwise be accomplished. ALTRVs are approved by the appropriate FAA facility.

(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ALTITUDE RESTRICTION- An altitude or altitudes, stated in the order flown, which are to be maintained until reaching a specific point or time. Altitude restrictions may be issued by ATC due to traffic, terrain, or other airspace considerations.

ALTITUDE RESTRICTIONS ARE CANCELED-Adherence to previously imposed altitude restrictions is no longer required during a climb or descent.

ALTRV-

(See ALTITUDE RESERVATION.)

AMVER-

(See AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM.)

APB-

(See AUTOMATED PROBLEM DETECTION BOUNDARY.)

APD-

(See AUTOMATED PROBLEM DETECTION.)

APDIA-

(See AUTOMATED PROBLEM DETECTION INHIBITED AREA.)

APPROACH CLEARANCE– Authorization by ATC for a pilot to conduct an instrument approach. The type of instrument approach for which a clearance and other pertinent information is provided in the approach clearance when required.

(See CLEARED APPROACH.) (See INSTRUMENT APPROACH PROCEDURE.) (Refer to AIM.) (Refer to 14 CFR Part 91.) 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.

ATS SURVEILLANCE SERVICE [ICAO]– A term used to indicate a service provided directly by means of an ATS surveillance system.

ATC SURVEILLANCE SOURCE– Used by ATC for establishing identification, control and separation using a target depicted on an air traffic control facility's video display that has met the relevant safety standards for operational use and received from one, or a combination, of the following surveillance sources:

a. Radar (See RADAR)

b. ADS-B (See AUTOMATIC DEPENDENT SURVEILLANCE–BROADCAST.)c. WAM (See WIDE AREA MULTILATERATION)

(See INTERROGATOR.) (See TRANSPONDER.) (See ICAO term RADAR.) (Refer to AIM.)

ATS SURVEILLANCE SYSTEM [ICAO]– A generic term meaning variously, ADS–B, PSR, SSR or any comparable ground–based system that enables the identification of aircraft.

Note: A comparable ground-based system is one that has been demonstrated, by comparative assessment or other methodology, to have a level of safety and performance equal to or better than monopulse SSR. ATCAA-

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(See ATC ASSIGNED AIRSPACE.)
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ATCRBS-

(See RADAR.)

ATCSCC-(See AIR TRAFFIC CONTROL SYSTEM COMMAND CENTER.)

ATCT-

(See TOWER.)

ATD-

(See ALONG-TRACK DISTANCE.)

ATIS-(See AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATIS [ICAO]-

(See ICAO Term AUTOMATIC TERMINAL INFORMATION SERVICE.)

ATS ROUTE [ICAO]– A specified route designed for channeling the flow of traffic as necessary for the provision of air traffic services.

Note: The term "ATS Route" is used to mean variously, airway, advisory route, controlled or uncontrolled route, arrival or departure, etc.

ATTENTION ALL USERS PAGE (AAUP)- The AAUP provides the pilot with additional information relative to conducting a specific operation, for example, PRM approaches and RNAV departures.

AUTOLAND APPROACH–An autoland system aids by providing control of aircraft systems during a precision instrument approach to at least decision altitude and possibly all the way to touchdown, as well as in some cases, through the landing rollout. The autoland system is a sub-system of the autopilot system from which control surface management occurs. The aircraft autopilot sends instructions to the autoland system and monitors the autoland system performance and integrity during its execution.

AUTOMATED INFORMATION TRANSFER- A precoordinated process, specifically defined in facility directives, during which a transfer of altitude control and/or radar identification is accomplished without verbal coordination between controllers using information communicated in a full data block.

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM- A facility which can deliver, in a matter of minutes, a surface picture (SURPIC) of vessels in the area of a potential or actual search and rescue incident, including their predicted positions and their characteristics.

(See FAAO JO 7110.65, Para 10-6-4, INFLIGHT CONTINGENCIES.)

AUTOMATED PROBLEM DETECTION (APD)– An Automation Processing capability that compares trajectories in order to predict conflicts.

AUTOMATED PROBLEM DETECTION BOUNDARY (APB)– The adapted distance beyond a facilities boundary defining the airspace within which EDST performs conflict detection.

(See EN ROUTE DECISION SUPPORT TOOL.)

AUTOMATED PROBLEM DETECTION IN-HIBITED AREA (APDIA) – Airspace surrounding a terminal area within which APD is inhibited for all flights within that airspace.

AUTOMATED RADAR TERMINAL SYSTEMS (ARTS)– A generic term for several tracking systems included in the Terminal Automation Systems (TAS). ARTS plus a suffix roman numeral denotes a major modification to that system.

a. ARTS IIIA. The Radar Tracking and Beacon Tracking Level (RT&BTL) of the modular, programmable automated radar terminal system. ARTS IIIA detects, tracks, and predicts primary as well as secondary radar-derived aircraft targets. This more sophisticated computer-driven system upgrades the existing ARTS III system by providing improved tracking, continuous data recording, and fail-soft capabilities.

b. Common ARTS. Includes ARTS IIE, ARTS IIIE; and ARTS IIIE with ACD (see DTAS) which combines functionalities of the previous ARTS systems.

AUTOMATED WEATHER SYSTEM- Any of the automated weather sensor platforms that collect weather data at airports and disseminate the weather information via radio and/or landline. The systems currently consist of the Automated Surface Observing System (ASOS), Automated Weather Sensor System (AWSS) and Automated Weather Observation System (AWOS).

AUTOMATED UNICOM- Provides completely automated weather, radio check capability and airport advisory information on an Automated UNICOM system. These systems offer a variety of features, typically selectable by microphone clicks, on the UNICOM frequency. Availability will be published in the Chart Supplement U.S. and approach charts.

AUTOMATIC ALTITUDE REPORT-(See ALTITUDE READOUT.)

AUTOMATIC ALTITUDE REPORTING– That function of a transponder which responds to Mode C interrogations by transmitting the aircraft's altitude in 100-foot increments.

AUTOMATIC CARRIER LANDING SYSTEM– U.S. Navy final approach equipment consisting of precision tracking radar coupled to a computer data link to provide continuous information to the aircraft, monitoring capability to the pilot, and a backup approach system.

AUTOMATIC DEPENDENT SURVEILLANCE (ADS) [ICAO]– A surveillance technique in which aircraft automatically provide, via a data link, data derived from on–board navigation and position fixing systems, including aircraft identification, four dimensional position and additional data as appropriate.

AUTOMATIC DEPENDENT SURVEILLANCE– BROADCAST (ADS-B)– A surveillance system in which an aircraft or vehicle to be detected is fitted with cooperative equipment in the form of a data link transmitter. The aircraft or vehicle periodically broadcasts its GPS–derived position and other information such as velocity over the data link, which is received by a ground–based transmitter/receiver (transceiver) for processing and display at an air traffic control facility.

(See GLOBAL POSITIONING SYSTEM.) (See GROUND-BASED TRANSCEIVER.)

AUTOMATIC DEPENDENT SURVEILLANCE– CONTRACT (ADS–C)– A data link position reporting system, controlled by a ground station, that establishes contracts with an aircraft's avionics that occur automatically whenever specific events occur, or specific time intervals are reached.

AUTOMATIC DEPENDENT SURVEILLANCE-REBROADCAST (ADS-R) is a datalink translation function of the ADS-B ground system required to accommodate the two separate operating frequencies (978 MHz and 1090 ES). The ADS-B system receives the ADS-B messages transmitted on one frequency and ADS-R translates and reformats the information for rebroadcast and use on the other frequency. This allows ADS-B In equipped aircraft to see nearby ADS–B Out traffic regardless of the operating link of the other aircraft. Aircraft operating on the same ADS–B frequency exchange information directly and do not require the ADS–R translation function.

AUTOMATIC DIRECTION FINDER– An aircraft radio navigation system which senses and indicates the direction to a L/MF nondirectional radio beacon (NDB) ground transmitter. Direction is indicated to the pilot as a magnetic bearing or as a relative bearing to the longitudinal axis of the aircraft depending on the type of indicator installed in the aircraft. In certain applications, such as military, ADF operations may be based on airborne and ground transmitters in the VHF/UHF frequency spectrum.

(See BEARING.) (See NONDIRECTIONAL BEACON.)

AUTOMATIC FLIGHT INFORMATION SERVICE (AFIS) – ALASKA FSSs ONLY– The continuous broadcast of recorded non–control information at airports in Alaska where a FSS provides local airport advisory service. The AFIS broadcast automates the repetitive transmission of essential but routine information such as weather, wind, altimeter, favored runway, breaking action, airport NOTAMs, and other applicable information. The information is continuously broadcast over a discrete VHF radio frequency (usually the ASOS/ AWSS/AWOS frequency.)

AUTOMATIC TERMINAL INFORMATION SERVICE- The continuous broadcast of recorded noncontrol information in selected terminal areas. Its purpose is to improve controller effectiveness and to relieve frequency congestion by automating the repetitive transmission of essential but routine information; e.g., "Los Angeles information Alfa. One three zero zero Coordinated Universal Time. Weather, measured ceiling two thousand overcast, visibility three, haze, smoke, temperature seven one, dew point five seven, wind two five zero at five, altimeter two niner niner six. I-L-S Runway Two Five Left approach in use, Runway Two Five Right closed, advise you have Alfa."

(See ICAO term AUTOMATIC TERMINAL INFORMATION SERVICE.) (Refer to AIM.)

AUTOMATIC TERMINAL INFORMATION SERVICE [ICAO] – The provision of current, routine information to arriving and departing aircraft by means of continuous and repetitive broadcasts throughout the day or a specified portion of the day.

AUTOROTATION- A rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.

a. Autorotative Landing/Touchdown Autorotation. Used by a pilot to indicate that the landing will be made without applying power to the rotor.

b. Low Level Autorotation. Commences at an altitude well below the traffic pattern, usually below 100 feet AGL and is used primarily for tactical military training.

c. 180 degrees Autorotation. Initiated from a downwind heading and is commenced well inside the normal traffic pattern. "Go around" may not be possible during the latter part of this maneuver.

AVAILABLE LANDING DISTANCE (ALD)– The portion of a runway available for landing and roll-out for aircraft cleared for LAHSO. This distance is measured from the landing threshold to the hold-short point.

AVIATION WEATHER SERVICE- A service provided by the National Weather Service (NWS) and FAA which collects and disseminates pertinent weather information for pilots, aircraft operators, and ATC. Available aviation weather reports and forecasts are displayed at each NWS office and FAA FSS.

(See TRANSCRIBED WEATHER BROADCAST.) (See WEATHER ADVISORY.) (Refer to AIM.)

AWW-

(See SEVERE WEATHER FORECAST ALERTS.)

B

BACK-TAXI– A term used by air traffic controllers to taxi an aircraft on the runway opposite to the traffic flow. The aircraft may be instructed to back-taxi to the beginning of the runway or at some point before reaching the runway end for the purpose of departure or to exit the runway.

BASE LEG-

(See TRAFFIC PATTERN.)

BEACON-

(See AERONAUTICAL BEACON.) (See AIRPORT ROTATING BEACON.) (See AIRWAY BEACON.) (See MARKER BEACON.) (See NONDIRECTIONAL BEACON.) (See RADAR.)

BEARING– The horizontal direction to or from any point, usually measured clockwise from true north, magnetic north, or some other reference point through 360 degrees.

(See NONDIRECTIONAL BEACON.)

BELOW MINIMUMS– Weather conditions below the minimums prescribed by regulation for the particular action involved; e.g., landing minimums, takeoff minimums.

BLAST FENCE- A barrier that is used to divert or dissipate jet or propeller blast.

BLAST PAD- A surface adjacent to the ends of a runway provided to reduce the erosive effect of jet blast and propeller wash.

BLIND SPEED- The rate of departure or closing of a target relative to the radar antenna at which cancellation of the primary radar target by moving target indicator (MTI) circuits in the radar equipment causes a reduction or complete loss of signal.

(See ICAO term BLIND VELOCITY.)

BLIND SPOT- An area from which radio transmissions and/or radar echoes cannot be received. The term is also used to describe portions of the airport not visible from the control tower.

BLIND TRANSMISSION-

(See TRANSMITTING IN THE BLIND.)

BLIND VELOCITY [ICAO]– The radial velocity of a moving target such that the target is not seen on primary radars fitted with certain forms of fixed echo suppression.

BLIND ZONE-

(See BLIND SPOT.)

BLOCKED– Phraseology used to indicate that a radio transmission has been distorted or interrupted due to multiple simultaneous radio transmissions.

BOTTOM ALTITUDE– In reference to published altitude restrictions on a STAR or STAR runway transition, the lowest altitude authorized.

BOUNDARY LIGHTS-(See AIRPORT LIGHTING.)

BRAKING ACTION (GOOD, MEDIUM, POOR, OR NIL) – A report of conditions on the airport movement area providing a pilot with a degree/quality of braking that he/she might expect. Braking action is reported in terms of good, fair, poor, or nil. Effective October 1, 2016, Braking Action will be categorized in the following terms: Good, Good to Medium, Medium, Medium to Poor, Poor, and Nil. (See PLINWAX CONDITION READING.)

(See RUNWAY CONDITION READING.)

BRAKING ACTION ADVISORIES- When tower controllers have received runway braking action reports which include the terms "fair," "poor," or "nil," or whenever weather conditions are conducive to deteriorating or rapidly changing runway braking conditions, the tower will include on the ATIS broadcast the statement, "Braking action advisories are in effect" on the ATIS broadcast. During the time braking action advisories are in effect, ATC will issue the latest braking action report for the runway in use to each arriving and departing aircraft. Pilots should be prepared for deteriorating braking conditions and should request current runway condition information if not volunteered by controllers. Pilots should also be prepared to provide a descriptive runway condition report to controllers after landing. Effective October 1, 2016, the term "fair" will be replaced with "medium".

BREAKOUT- A technique to direct aircraft out of the approach stream. In the context of simultaneous (independent) parallel operations, a breakout is used to direct threatened aircraft away from a deviating aircraft.

BROADCAST- Transmission of information for which an acknowledgement is not expected.

(See ICAO term BROADCAST.)

BROADCAST [ICAO] – A transmission of information relating to air navigation that is not addressed to a specific station or stations.

BUFFER AREA- As applied to an MVA or MIA chart, a depicted three (3) or five (5) NM radius MVA/MIA sector isolating a displayed obstacle for which the sector is established. A portion of a buffer area can also be inclusive of a MVA/MIA sector polygon boundary.

power or control. The standard overhead approach starts at a relatively high altitude over a runway ("high key") followed by a continuous 180 degree turn to a high, wide position ("low key") followed by a continuous 180 degree turn final. The standard straight-in pattern starts at a point that results in a straight-in approach with a high rate of descent to the runway. Flameout approaches terminate in the type approach requested by the pilot (normally fullstop).

FLIGHT CHECK– A call-sign prefix used by FAA aircraft engaged in flight inspection/certification of navigational aids and flight procedures. The word "recorded" may be added as a suffix; e.g., "Flight Check 320 recorded" to indicate that an automated flight inspection is in progress in terminal areas.

(See FLIGHT INSPECTION.) (Refer to AIM.)

FLIGHT FOLLOWING-(See TRAFFIC ADVISORIES.)

FLIGHT INFORMATION REGION– An airspace of defined dimensions within which Flight Information Service and Alerting Service are provided.

a. Flight Information Service. A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

b. Alerting Service. A service provided to notify appropriate organizations regarding aircraft in need of search and rescue aid and to assist such organizations as required.

FLIGHT INFORMATION SERVICE- A service provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights.

FLIGHT INFORMATION SERVICE– BROADCAST (FIS–B)– A ground broadcast service provided through the ADS–B Broadcast Services network over the UAT data link that operates on 978 MHz. The FIS–B system provides pilots and flight crews of properly equipped aircraft with a cockpit display of certain aviation weather and aeronautical information.

FLIGHT INSPECTION– Inflight investigation and evaluation of a navigational aid to determine whether it meets established tolerances.

(See FLIGHT CHECK.) (See NAVIGATIONAL AID.) **FLIGHT LEVEL** – A level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level (FL) 250 represents a barometric altimeter indication of 25,000 feet; FL 255, an indication of 25,500 feet.

(See ICAO term FLIGHT LEVEL.)

FLIGHT LEVEL [ICAO]– A surface of constant atmospheric pressure which is related to a specific pressure datum, 1013.2 hPa (1013.2 mb), and is separated from other such surfaces by specific pressure intervals.

Note 1: A pressure type altimeter calibrated in accordance with the standard atmosphere:

a. When set to a QNH altimeter setting, will indicate altitude;

b. When set to a QFE altimeter setting, will indicate height above the QFE reference datum; and

c. When set to a pressure of 1013.2 hPa

(1013.2 mb), may be used to indicate flight levels.

Note 2: The terms 'height' and 'altitude,' used in Note 1 above, indicate altimetric rather than geometric heights and altitudes.

FLIGHT LINE- A term used to describe the precise movement of a civil photogrammetric aircraft along a predetermined course(s) at a predetermined altitude during the actual photographic run.

FLIGHT MANAGEMENT SYSTEMS- A computer system that uses a large data base to allow routes to be preprogrammed and fed into the system by means of a data loader. The system is constantly updated with respect to position accuracy by reference to conventional navigation aids. The sophisticated program and its associated data base ensures that the most appropriate aids are automatically selected during the information update cycle.

FLIGHT PATH– A line, course, or track along which an aircraft is flying or intended to be flown.

(See COURSE.) (See TRACK.)

FLIGHT PLAN– Specified information relating to the intended flight of an aircraft that is filed orally or in writing with an FSS or an ATC facility.

(See FAST FILE.) (See FILED.) (Refer to AIM.)

FLIGHT PLAN AREA (FPA)– The geographical area assigned to a flight service station (FSS) for the

purpose of establishing primary responsibility for services that may include search and rescue for VFR aircraft, issuance of NOTAMs, pilot briefings, inflight services, broadcast services, emergency services, flight data processing, international operations, and aviation weather services. Large consolidated FSS facilities may combine FPAs into larger areas of responsibility (AOR).

(See FLIGHT SERVICE STATION.) (See TIE-IN FACILITY.)

FLIGHT RECORDER- A general term applied to any instrument or device that records information about the performance of an aircraft in flight or about conditions encountered in flight. Flight recorders may make records of airspeed, outside air temperature, vertical acceleration, engine RPM, manifold pressure, and other pertinent variables for a given flight.

(See ICAO term FLIGHT RECORDER.)

FLIGHT RECORDER [ICAO] – Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Note: See Annex 6 Part I, for specifications relating to flight recorders.

FLIGHT SERVICE STATION (FSS)– An air traffic facility which provides pilot briefings, flight plan processing, en route flight advisories, search and rescue services, and assistance to lost aircraft and aircraft in emergency situations. FSS also relay ATC clearances, process Notices to Airmen, broadcast aviation weather and aeronautical information, and advise Customs and Immigration of transborder flights. In Alaska, FSS provide Airport Advisory Services.

(See FLIGHT PLAN AREA.) (See TIE-IN FACILITY.)

FLIGHT STANDARDS DISTRICT OFFICE- An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

FLIGHT TERMINATION- The intentional and deliberate process of terminating the flight of a UA in the event of an unrecoverable lost link, loss of

FLIGHT TEST- A flight for the purpose of:

a. Investigating the operation/flight characteristics of an aircraft or aircraft component.

b. Evaluating an applicant for a pilot certificate or rating.

FLIGHT VISIBILITY-

(See VISIBILITY.)

FLIP-

(See DOD FLIP.)

FLY HEADING (DEGREES)– Informs the pilot of the heading he/she should fly. The pilot may have to turn to, or continue on, a specific compass direction in order to comply with the instructions. The pilot is expected to turn in the shorter direction to the heading unless otherwise instructed by ATC.

FLY-BY WAYPOINT- A fly-by waypoint requires the use of turn anticipation to avoid overshoot of the next flight segment.

FLY-OVER WAYPOINT- A fly-over waypoint precludes any turn until the waypoint is overflown and is followed by an intercept maneuver of the next flight segment.

FLY VISUAL TO AIRPORT-

(See PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT.)

FMA-

(See FINAL MONITOR AID.)

FMS-

(See FLIGHT MANAGEMENT SYSTEM.)

FORMATION FLIGHT– More than one aircraft which, by prior arrangement between the pilots, operate as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during join-up and breakaway.

a. A standard formation is one in which a proximity of no more than 1 mile laterally or longitudinally and within 100 feet vertically from the flight leader is maintained by each wingman.

b. Nonstandard formations are those operating under any of the following conditions:

1. When the flight leader has requested and ATC has approved other than standard formation dimensions.

2. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.

3. When the operations are conducted in airspace specifically designed for a special activity.

(See ALTITUDE RESERVATION.)

(Refer to 14 CFR Part 91.)

FRC-

(See REQUEST FULL ROUTE CLEARANCE.)

FREEZE/FROZEN- Terms used in referring to arrivals which have been assigned ACLTs and to the lists in which they are displayed.

FREEZE CALCULATED LANDING TIME- A dynamic parameter number of minutes prior to the meter fix calculated time of arrival for each aircraft when the TCLT is frozen and becomes an ACLT (i.e., the VTA is updated and consequently the TCLT is modified as appropriate until FCLT minutes prior to meter fix calculated time of arrival, at which time updating is suspended and an ACLT and a frozen meter fix crossing time (MFT) is assigned).

FREEZE HORIZON– The time or point at which an aircraft's STA becomes fixed and no longer fluctuates with each radar update. This setting ensures a constant time for each aircraft, necessary for the metering controller to plan his/her delay technique. This setting can be either in distance from the meter fix or a prescribed flying time to the meter fix.

FREEZE SPEED PARAMETER- A speed adapted for each aircraft to determine fast and slow aircraft. Fast aircraft freeze on parameter FCLT and slow aircraft freeze on parameter MLDI.

FRICTION MEASUREMENT- A measurement of the friction characteristics of the runway pavement surface using continuous self-watering friction measurement equipment in accordance with the specifications, procedures and schedules contained in AC 150/5320–12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces.

FSDO-

(See FLIGHT STANDARDS DISTRICT OFFICE.) FSPD-

(See FREEZE SPEED PARAMETER.)

FSS-

(See FLIGHT SERVICE STATION.)

FUEL DUMPING– Airborne release of usable fuel. This does not include the dropping of fuel tanks.

(See JETTISONING OF EXTERNAL STORES.)

FUEL REMAINING- A phrase used by either pilots or controllers when relating to the fuel remaining on board until actual fuel exhaustion. When transmitting such information in response to either a controller question or pilot initiated cautionary advisory to air traffic control, pilots will state the APPROXIMATE NUMBER OF MINUTES the flight can continue with the fuel remaining. All reserve fuel SHOULD BE INCLUDED in the time stated, as should an allowance for established fuel gauge system error.

FUEL SIPHONING– Unintentional release of fuel caused by overflow, puncture, loose cap, etc.

FUEL VENTING-(See FUEL SIPHONING.)

FUSED TARGET-

(See DIGITAL TARGET)

FUSION [STARS/CARTS]- the combination of all available surveillance sources (airport surveillance radar [ASR], air route surveillance radar [ARSR], ADS-B, etc.) into the display of a single tracked target for air traffic control separation services. FUSION is the equivalent of the current single-sensor radar display. FUSION performance is characteristic of a single-sensor radar display system. Terminal areas use mono-pulse secondary surveillance radar (ASR 9, Mode S or ASR 11, MSSR).

Ι

I SAYAGAIN- The message will be repeated.

IAF-

(See INITIAL APPROACH FIX.)

IAP-

(See INSTRUMENT APPROACH PROCEDURE.)

IAWP- Initial Approach Waypoint

ICAO-

(See ICAO Term INTERNATIONAL CIVIL AVIATION ORGANIZATION.)

ICING- The accumulation of airframe ice.

Types of icing are:

a. Rime Ice– Rough, milky, opaque ice formed by the instantaneous freezing of small supercooled water droplets.

b. Clear Ice- A glossy, clear, or translucent ice formed by the relatively slow freezing or large supercooled water droplets.

c. Mixed- A mixture of clear ice and rime ice.

Intensity of icing:

a. Trace- Ice becomes perceptible. Rate of accumulation is slightly greater than the rate of sublimation. Deicing/anti-icing equipment is not utilized unless encountered for an extended period of time (over 1 hour).

b. Light– The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.

c. Moderate– The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment or flight diversion is necessary.

d. Severe– The rate of ice accumulation is such that ice protection systems fail to remove the accumulation of ice, or ice accumulates in locations not normally prone to icing, such as areas aft of protected surfaces and any other areas identified by

the manufacturer. Immediate exit from the condition is necessary.

Note:

Severe icing is aircraft dependent, as are the other categories of icing intensity. Severe icing may occur at any ice accumulation rate.

IDENT – A request for a pilot to activate the aircraft transponder identification feature. This will help the controller to confirm an aircraft identity or to identify an aircraft.

(Refer to AIM.)

IDENT FEATURE- The special feature in the Air Traffic Control Radar Beacon System (ATCRBS) equipment. It is used to immediately distinguish one displayed beacon target from other beacon targets.

(See IDENT.)

IDENTIFICATION [ICAO]– The situation which exists when the position indication of a particular aircraft is seen on a situation display and positively identified.

IF–

(See INTERMEDIATE FIX.)

IFIM-

(See INTERNATIONAL FLIGHT INFORMATION MANUAL.)

IF NO TRANSMISSION RECEIVED FOR (TIME)– Used by ATC in radar approaches to prefix procedures which should be followed by the pilot in event of lost communications.

(See LOST COMMUNICATIONS.)

IFR-

(See INSTRUMENT FLIGHT RULES.)

IFR AIRCRAFT- An aircraft conducting flight in accordance with instrument flight rules.

IFR CONDITIONS– Weather conditions below the minimum for flight under visual flight rules.

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IFR DEPARTURE PROCEDURE– (See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.) (Refer to AIM.)

IFR FLIGHT– (See IFR AIRCRAFT.)

IFR LANDING MINIMUMS– (See LANDING MINIMUMS.)

IFR MILITARY TRAINING ROUTES (IR)– Routes used by the Department of Defense and associated Reserve and Air Guard units for the purpose of conducting low-altitude navigation and tactical training in both IFR and VFR weather conditions below 10,000 feet MSL at airspeeds in excess of 250 knots IAS.

IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES- Title 14 Code of Federal Regulations Part 91, prescribes standard takeoff rules for certain civil users. At some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums, departure procedures, or both to assist pilots in avoiding obstacles during climb to the minimum en route altitude. Those airports are listed in FAA/DOD Instrument Approach Procedures (IAPs) Charts under a section entitled "IFR Takeoff Minimums and Departure Procedures." The FAA/DOD IAP chart legend illustrates the symbol used to alert the pilot to nonstandard takeoff minimums and departure procedures. When departing IFR from such airports or from any airports where there are no departure procedures, DPs, or ATC facilities available, pilots should advise ATC of any departure limitations. Controllers may query a pilot to determine acceptable departure directions, turns, or headings after takeoff. Pilots should be familiar with the departure procedures and must assure that their aircraft can meet or exceed any specified climb gradients.

IF/IAWP- Intermediate Fix/Initial Approach Waypoint. The waypoint where the final approach course of a T approach meets the crossbar of the T. When designated (in conjunction with a TAA) this waypoint will be used as an IAWP when approaching the airport from certain directions, and as an IFWP when beginning the approach from another IAWP.

IFWP- Intermediate Fix Waypoint

ILS-

(See INSTRUMENT LANDING SYSTEM.)

ILS CATEGORIES- 1. Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.-2. Special Authorization Category I. An ILS approach procedure which provides for approach to a height above touchdown of not less than 150 feet and with runway visual range of not less than 1,400 feet, HUD to DH. 3. Category II. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet (with autoland or HUD to touchdown and noted on authorization, RVR 1,000 feet).– 4. Special Authorization Category II with Reduced Lighting. An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet with autoland or HUD to touchdown and noted on authorization (no touchdown zone and centerline lighting are required).– 5. Category III:

a. IIIA.-An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.

b. IIIB.-An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.

c. IIIC.-An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

ILS PRM APPROACH- An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 feet and at least 3,000 feet where independent closely spaced approaches are permitted. Also used in conjunction with an LDA PRM, RNAV PRM or GLS PRM approach to conduct Simultaneous Offset Instrument Approach (SOIA) operations. No Transgression Zone (NTZ) monitoring is required to conduct these approaches. ATC utilizes an enhanced display with alerting and, with certain runway spacing, a high update rate PRM surveillance sensor. Use of a secondary monitor frequency, pilot PRM training, and publication of an Attention All Users Page are also required for all PRM approaches.

(Refer to AIM)

IM-

(See INNER MARKER.)

IMC-

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

IMMEDIATELY– Used by ATC or pilots when such action compliance is required to avoid an imminent situation.

INCERFA (Uncertainty Phase) [ICAO]– A situation wherein uncertainty exists as to the safety of an aircraft and its occupants.

INCREASE SPEED TO (SPEED)-(See SPEED ADJUSTMENT.)

INERTIAL NAVIGATION SYSTEM- An RNAV system which is a form of self-contained navigation. (See Area Navigation/RNAV.)

INFLIGHT REFUELING-

(See AERIAL REFUELING.)

INFLIGHT WEATHER ADVISORY-(See WEATHER ADVISORY.)

INFORMATION REQUEST- A request originated by an FSS for information concerning an overdue VFR aircraft.

INITIAL APPROACH FIX- The fixes depicted on instrument approach procedure charts that identify the beginning of the initial approach segment(s).

(See FIX.) (See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT-(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INITIAL APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point.

INLAND NAVIGATION FACILITY- A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

INNER MARKER– A marker beacon used with an ILS (CAT II) precision approach located between the middle marker and the end of the ILS runway, transmitting a radiation pattern keyed at six dots per second and indicating to the pilot, both aurally and visually, that he/she is at the designated decision height (DH), normally 100 feet above the touchdown zone elevation, on the ILS CAT II approach. It also marks progress during a CAT III approach.

(See INSTRUMENT LANDING SYSTEM.) (Refer to AIM.) INNER MARKER BEACON-(See INNER MARKER.)

INREQ-

(See INFORMATION REQUEST.)

INS-

(See INERTIAL NAVIGATION SYSTEM.)

INSTRUMENT APPROACH-(See INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE- A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority.

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.) (Refer to 14 CFR Part 91.) (Refer to AIM.)

a. U.S. civil standard instrument approach procedures are approved by the FAA as prescribed under 14 CFR Part 97 and are available for public use.

b. U.S. military standard instrument approach procedures are approved and published by the Department of Defense.

c. Special instrument approach procedures are approved by the FAA for individual operators but are not published in 14 CFR Part 97 for public use.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH OPERATIONS [ICAO]* An approach and landing using instruments for navigation guidance based on an instrument approach procedure. There are two methods for executing instrument approach operations:

a. A two-dimensional (2D) instrument approach operation, using lateral navigation guidance only; and

b. A three–dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Note: Lateral and vertical navigation guidance refers to the guidance provided either by:

a) a ground-based radio navigation aid; or

b) computer-generated navigation data from

ground-based, space-based, self-contained navigation aids or a combination of these.

(See ICAO term INSTRUMENT APPROACH PROCEDURE.)

INSTRUMENT APPROACH PROCEDURE [ICAO]– A series of predetermined maneuvers by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point from which a landing can be completed and thereafter, if a landing is not completed, to a position at which holding or en route obstacle clearance criteria apply.

(See ICAO term INSTRUMENT APPROACH OPERATIONS)

INSTRUMENT APPROACH PROCEDURES CHARTS-

(See AERONAUTICAL CHART.)

INSTRUMENT DEPARTURE PROCEDURE (DP)- A preplanned instrument flight rule (IFR) departure procedure published for pilot use, in graphic or textual format, that provides obstruction clearance from the terminal area to the appropriate en route structure. There are two types of DP, Obstacle Departure Procedure (ODP), printed either textually or graphically, and, Standard Instrument Departure (SID), which is always printed graphically.

(See IFR TAKEOFF MINIMUMS AND DEPARTURE PROCEDURES.)

(See OBSTACLE DEPARTURE PROCEDURES.) (See STANDARD INSTRUMENT DEPARTURES.) (Refer to AIM.)

INSTRUMENT DEPARTURE PROCEDURE (DP) CHARTS-

(See AERONAUTICAL CHART.)

INSTRUMENT FLIGHT RULES– Rules governing the procedures for conducting instrument flight. Also a term used by pilots and controllers to indicate type of flight plan.

(See INSTRUMENT METEOROLOGICAL CONDITIONS.)

(See VISUAL FLIGHT RULES.)

(See VISUAL METEOROLOGICAL CONDITIONS.)

(See ICAO term INSTRUMENT FLIGHT

RULES.)

(Refer to AIM.)

INSTRUMENT FLIGHT RULES [ICAO] – A set of rules governing the conduct of flight under instrument meteorological conditions.

INSTRUMENT LANDING SYSTEM– A precision instrument approach system which normally consists of the following electronic components and visual aids:

a. Localizer.
(See LOCALIZER.)
b. Glideslope.
(See GLIDESLOPE.)
c. Outer Marker.
(See OUTER MARKER.)
d. Middle Marker.
(See MIDDLE MARKER.)

e. Approach Lights. (See AIRPORT LIGHTING.) (Refer to 14 CFR Part 91.) (Refer to AIM.)

INSTRUMENT METEOROLOGICAL CONDI-TIONS– Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

(See INSTRUMENT FLIGHT RULES.) (See VISUAL FLIGHT RULES.) (See VISUAL METEOROLOGICAL CONDITIONS.)

INSTRUMENT RUNWAY- A runway equipped with electronic and visual navigation aids for which a precision or nonprecision approach procedure having straight-in landing minimums has been approved.

(See ICAO term INSTRUMENT RUNWAY.)

INSTRUMENT RUNWAY [ICAO]– One of the following types of runways intended for the operation of aircraft using instrument approach procedures:

a. Nonprecision Approach Runway–An instrument runway served by visual aids and a nonvisual aid providing at least directional guidance adequate for a straight-in approach.

b. Precision Approach Runway, Category I–An instrument runway served by ILS and visual aids intended for operations down to 60 m (200 feet) decision height and down to an RVR of the order of 800 m.
c. Precision Approach Runway, Category II–An instrument runway served by ILS and visual aids intended for operations down to 30 m (100 feet) decision height and down to an RVR of the order of 400 m.

d. Precision Approach Runway, Category III–An instrument runway served by ILS to and along the surface of the runway and:

1. Intended for operations down to an RVR of the order of 200 m (no decision height being applicable) using visual aids during the final phase of landing;

2. Intended for operations down to an RVR of the order of 50 m (no decision height being applicable) using visual aids for taxiing;

3. Intended for operations without reliance on visual reference for landing or taxiing.

Note 1: See Annex 10 Volume I, Part I, Chapter 3, for related ILS specifications.

Note 2: Visual aids need not necessarily be matched to the scale of nonvisual aids provided. The criterion for the selection of visual aids is the conditions in which operations are intended to be conducted.

INTEGRITY– The ability of a system to provide timely warnings to users when the system should not be used for navigation.

INTERMEDIATE APPROACH SEGMENT-(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE APPROACH SEGMENT [ICAO]– That segment of an instrument approach procedure between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, race track or dead reckoning track procedure and the final approach fix or point, as appropriate.

INTERMEDIATE FIX- The fix that identifies the beginning of the intermediate approach segment of an instrument approach procedure. The fix is not normally identified on the instrument approach chart as an intermediate fix (IF).

(See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

INTERMEDIATE LANDING- On the rare occasion that this option is requested, it should be approved. The departure center, however, must advise the ATCSCC so that the appropriate delay is carried over and assigned at the intermediate airport. An intermediate landing airport within the arrival center will not be accepted without coordination with and the approval of the ATCSCC.

INTERNATIONAL AIRPORT– Relating to international flight, it means:

a. An airport of entry which has been designated by the Secretary of Treasury or Commissioner of Customs as an international airport for customs service.

b. A landing rights airport at which specific permission to land must be obtained from customs authorities in advance of contemplated use.

c. Airports designated under the Convention on International Civil Aviation as an airport for use by international commercial air transport and/or international general aviation.

(See ICAO term INTERNATIONAL AIRPORT.) (Refer to Chart Supplement U.S.) (Refer to IFIM.)

INTERNATIONAL AIRPORT [ICAO]– Any airport designated by the Contracting State in whose territory it is situated as an airport of entry and departure for international air traffic, where the formalities incident to customs, immigration, public health, animal and plant quarantine and similar procedures are carried out.

INTERNATIONAL CIVIL AVIATION ORGA-NIZATION [ICAO] – A specialized agency of the United Nations whose objective is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.

- **a.** Regions include:
 - **1.** African-Indian Ocean Region
 - 2. Caribbean Region
 - 3. European Region
 - 4. Middle East/Asia Region
 - 5. North American Region
 - **6.** North Atlantic Region
 - 7. Pacific Region
 - 8. South American Region

INTERNATIONAL FLIGHT INFORMATION MANUAL- A publication designed primarily as a pilot's preflight planning guide for flights into foreign airspace and for flights returning to the U.S. from foreign locations. INTERROGATOR- The ground-based surveillance radar beacon transmitter-receiver, which normally scans in synchronism with a primary radar, transmitting discrete radio signals which repetitiously request all transponders on the mode being used to reply. The replies received are mixed with the primary radar returns and displayed on the same plan position indicator (radar scope). Also, applied to the airborne element of the TACAN/DME system.

(See TRANSPONDER.)

(Refer to AIM.)

INTERSECTING RUNWAYS – Two or more runways which cross or meet within their lengths.

(See INTERSECTION.) INTERSECTION-

a. A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

b. Used to describe the point where two runways, a runway and a taxiway, or two taxiways cross or meet.

INTERSECTION DEPARTURE- A departure from any runway intersection except the end of the runway. (See INTERSECTION.)

INTERSECTION TAKEOFF-(See INTERSECTION DEPARTURE.)

IR–

(See IFR MILITARY TRAINING ROUTES.)

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.

at least 750 feet. NTZ monitoring is required to conduct these approaches.

(See SIMULTANEOUS OFFSET INSTRUMENT APPROACH (SOIA).) (Refer to AIM)

LOCALIZER USABLE DISTANCE- The maximum distance from the localizer transmitter at a specified altitude, as verified by flight inspection, at which reliable course information is continuously received.

(Refer to AIM.)

LOCATOR [ICAO] – An LM/MF NDB used as an aid to final approach.

Note: A locator usually has an average radius of rated coverage of between 18.5 and 46.3 km (10 and 25 NM).

LONG RANGE NAVIGATION-(See LORAN.)

LONGITUDINAL SEPARATION- The longitudinal spacing of aircraft at the same altitude by a minimum distance expressed in units of time or miles.

(See SEPARATION.) (Refer to AIM.)

LORAN- An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters. Loran A operates in the 1750-1950 kHz frequency band. Loran C and D operate in the 100-110 kHz frequency band. In 2010, the U.S. Coast Guard terminated all U.S. LORAN-C transmissions.

(Refer to AIM.)

LOST COMMUNICATIONS– Loss of the ability to communicate by radio. Aircraft are sometimes referred to as NORDO (No Radio). Standard pilot procedures are specified in 14 CFR Part 91. Radar controllers issue procedures for pilots to follow in the event of lost communications during a radar approach when weather reports indicate that an aircraft will likely encounter IFR weather conditions during the approach.

(Refer to 14 CFR Part 91.) (Refer to AIM.) LOST LINK– An interruption or loss of the control link, or when the pilot is unable to effect control of the aircraft and, as a result, the UA will perform a predictable or planned maneuver. Loss of command and control link between the Control Station and the aircraft. There are two types of links:

a. An uplink which transmits command instructions to the aircraft, and

b. A downlink which transmits the status of the aircraft and provides situational awareness to the pilot.

LOST LINK PROCEDURE– Preprogrammed or predetermined mitigations to ensure the continued safe operation of the UA in the event of a lost link (LL). In the event positive link cannot be established, flight termination must be implemented.

LOW ALTITUDE AIRWAY STRUCTURE– The network of airways serving aircraft operations up to but not including 18,000 feet MSL.

(See AIRWAY.) (Refer to AIM.)

LOW ALTITUDE ALERT, CHECK YOUR ALTI-TUDE IMMEDIATELY-(See SAFETY ALERT.)

LOW APPROACH– An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway.

(Refer to AIM.)

LOW FREQUENCY– The frequency band between 30 and 300 kHz.

(Refer to AIM.)

LPV- A type of approach with vertical guidance (APV) based on WAAS, published on RNAV (GPS) approach charts. This procedure takes advantage of the precise lateral guidance available from WAAS. The minima is published as a decision altitude (DA).

LUAW-

(See LINE UP AND WAIT.)

electronic glideslope is provided; e.g., VOR, TACAN, NDB, LOC, ASR, LDA, or SDF approaches.

NONRADAR– Precedes other terms and generally means without the use of radar, such as:

a. Nonradar Approach. Used to describe instrument approaches for which course guidance on final approach is not provided by ground-based precision or surveillance radar. Radar vectors to the final approach course may or may not be provided by ATC. Examples of nonradar approaches are VOR, NDB, TACAN, ILS, RNAV, and GLS approaches.

(See FINAL APPROACH COURSE.) (See FINAL APPROACH-IFR.) (See INSTRUMENT APPROACH PROCEDURE.)

(See RADAR APPROACH.)

b. Nonradar Approach Control. An ATC facility providing approach control service without the use of radar.

(See APPROACH CONTROL FACILITY.) (See APPROACH CONTROL SERVICE.)

c. Nonradar Arrival. An aircraft arriving at an airport without radar service or at an airport served by a radar facility and radar contact has not been established or has been terminated due to a lack of radar service to the airport.

(See RADAR ARRIVAL.) (See RADAR SERVICE.)

d. Nonradar Route. A flight path or route over which the pilot is performing his/her own navigation. The pilot may be receiving radar separation, radar monitoring, or other ATC services while on a nonradar route.

(See RADAR ROUTE.)

e. Nonradar Separation. The spacing of aircraft in accordance with established minima without the use of radar; e.g., vertical, lateral, or longitudinal separation.

(See RADAR SEPARATION.)

NON-RESTRICTIVE ROUTING (NRR)- Portions of a proposed route of flight where a user can flight plan the most advantageous flight path with no requirement to make reference to ground-based NAVAIDs.

NOPAC-

(See NORTH PACIFIC.)

NORDO (No Radio)– Aircraft that cannot or do not communicate by radio when radio communication is required are referred to as "NORDO."

(See LOST COMMUNICATIONS.)

NORMAL OPERATING ZONE (NOZ)– The NOZ is the operating zone within which aircraft flight remains during normal independent simultaneous parallel ILS approaches.

NORTH AMERICAN ROUTE- A numerically coded route preplanned over existing airway and route systems to and from specific coastal fixes serving the North Atlantic. North American Routes consist of the following:

a. Common Route/Portion. That segment of a North American Route between the inland navigation facility and the coastal fix.

b. Noncommon Route/Portion. That segment of a North American Route between the inland navigation facility and a designated North American terminal.

c. Inland Navigation Facility. A navigation aid on a North American Route at which the common route and/or the noncommon route begins or ends.

d. Coastal Fix. A navigation aid or intersection where an aircraft transitions between the domestic route structure and the oceanic route structure.

NORTH AMERICAN ROUTE PROGRAM (NRP)– The NRP is a set of rules and procedures which are designed to increase the flexibility of user flight planning within published guidelines.

NORTH ATLANTIC HIGH LEVEL AIRSPACE (NAT HLA)– That volume of airspace (as defined in ICAO Document 7030) between FL 285 and FL 420 within the Oceanic Control Areas of Bodo Oceanic, Gander Oceanic, New York Oceanic East, Reykjavik, Santa Maria, and Shanwick, excluding the Shannon and Brest Ocean Transition Areas. ICAO Doc 007 North Atlantic Operations and Airspace Manual provides detailed information on related aircraft and operational requirements.

NORTH 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 (LOCA-TION)– A traffic advisory issued by ATC to advise pilots that targets on the radar scope are too numerous to issue individually.

(See TRAFFIC ADVISORIES.)

PRECISION APPROACH RADAR– Radar equipment in some ATC facilities operated by the FAA and/or the military services at joint-use civil/military locations and separate military installations to detect and display azimuth, elevation, and range of aircraft on the final approach course to a runway. This equipment may be used to monitor certain nonradar approaches, but is primarily used to conduct a precision instrument approach (PAR) wherein the controller issues guidance instructions to the pilot based on the aircraft's position in relation to the final approach course (azimuth), the glidepath (elevation), and the distance (range) from the touchdown point on the runway as displayed on the radar scope.

Note: The abbreviation "PAR" is also used to denote preferential arrival routes in ARTCC computers.

(See GLIDEPATH.) (See PAR.) (See PREFERENTIAL ROUTES.) (See ICAO term PRECISION APPROACH RADAR.) (Refer to AIM.)

PRECISION APPROACH RADAR [ICAO]– Primary radar equipment used to determine the position of an aircraft during final approach, in terms of lateral and vertical deviations relative to a nominal approach path, and in range relative to touchdown.

Note: Precision approach radars are designed to enable pilots of aircraft to be given guidance by radio communication during the final stages of the approach to land.

PRECISION OBSTACLE FREE ZONE (POFZ)– An 800 foot wide by 200 foot long area centered on the runway centerline adjacent to the threshold designed to protect aircraft flying precision approaches from ground vehicles and other aircraft when ceiling is less than 250 feet or visibility is less than 3/4 statute mile (or runway visual range below 4,000 feet.)

PRECISION RUNWAY MONITOR (PRM) SYSTEM- Provides air traffic controllers monitoring the NTZ during simultaneous close parallel PRM approaches with precision, high update rate secondary surveillance data. The high update rate surveillance sensor component of the PRM system is only required for specific runway or approach course separation. The high resolution color monitoring display, Final Monitor Aid (FMA) of the PRM system, or other FMA with the same capability, presents (NTZ) surveillance track data to controllers along with detailed maps depicting approaches and no transgression zone and is required for all simultaneous close parallel PRM NTZ monitoring operations.

(Refer to AIM)

PREDICTIVE WIND SHEAR ALERT SYSTEM (PWS)– A self–contained system used onboard some aircraft to alert the flight crew to the presence of a potential wind shear. PWS systems typically monitor 3 miles ahead and 25 degrees left and right of the aircraft's heading at or below 1200' AGL. Departing flights may receive a wind shear alert after they start the takeoff roll and may elect to abort the takeoff. Aircraft on approach receiving an alert may elect to go around or perform a wind shear escape maneuver.

PREFERENTIAL ROUTES- Preferential routes (PDRs, PARs, and PDARs) are adapted in ARTCC computers to accomplish inter/intrafacility controller coordination and to assure that flight data is posted at the proper control positions. Locations having a need for these specific inbound and outbound routes normally publish such routes in local facility bulletins, and their use by pilots minimizes flight plan route amendments. When the workload or traffic situation permits, controllers normally provide radar vectors or assign requested routes to minimize circuitous routing. Preferential routes are usually confined to one ARTCC's area and are referred to by the following names or acronyms:

a. Preferential Departure Route (PDR). A specific departure route from an airport or terminal area to an en route point where there is no further need for flow control. It may be included in an Instrument Departure Procedure (DP) or a Preferred IFR Route.

b. Preferential Arrival Route (PAR). A specific arrival route from an appropriate en route point to an airport or terminal area. It may be included in a Standard Terminal Arrival (STAR) or a Preferred IFR Route. The abbreviation "PAR" is used primarily within the ARTCC and should not be confused with the abbreviation for Precision Approach Radar.

c. Preferential Departure and Arrival Route (PDAR). A route between two terminals which are within or immediately adjacent to one ARTCC's area. PDARs are not synonymous with Preferred IFR Routes but may be listed as such as they do accomplish essentially the same purpose.

(See PREFERRED IFR ROUTES.)

PREFERRED IFR ROUTES- Routes established between busier airports to increase system efficiency and capacity. They normally extend through one or more ARTCC areas and are designed to achieve balanced traffic flows among high density terminals. IFR clearances are issued on the basis of these routes except when severe weather avoidance procedures or other factors dictate otherwise. Preferred IFR Routes are listed in the Chart Supplement U.S. If a flight is planned to or from an area having such routes but the departure or arrival point is not listed in the Chart Supplement U.S., pilots may use that part of a Preferred IFR Route which is appropriate for the departure or arrival point that is listed. Preferred IFR Routes are correlated with DPs and STARs and may be defined by airways, jet routes, direct routes between NAVAIDs, Waypoints, NAVAID radials/ DME, or any combinations thereof.

(See CENTER'S AREA.) (See INSTRUMENT DEPARTURE PROCEDURE.) (See PREFERENTIAL ROUTES.) (See STANDARD TERMINAL ARRIVAL.) (Refer to CHART SUPPLEMENT U.S.) (Refer to NOTICES TO AIRMEN PUBLICATION.)

PRE-FLIGHT PILOT BRIEFING-(See PILOT BRIEFING.)

PREVAILING VISIBILITY-(See VISIBILITY.)

PRIMARY RADAR TARGET– An analog or digital target, exclusive of a secondary radar target, presented on a radar display.

PRM-

(See ILS PRM APPROACH and PRECISION RUNWAY MONITOR SYSTEM.)

PROCEDURAL CONTROL [ICAO]– Term used to indicate that information derived from an ATS surveillance system is not required for the provision of air traffic control service.

PROCEDURAL SEPARATION [ICAO]– The separation used when providing procedural control.

PROCEDURE TURN- The maneuver prescribed when it is necessary to reverse direction to establish an aircraft on the intermediate approach segment or final approach course. The outbound course, direction of turn, distance within which the turn must be completed, and minimum altitude are specified in the procedure. However, unless otherwise restricted, the point at which the turn may be commenced and the type and rate of turn are left to the discretion of the pilot.

(See ICAO term PROCEDURE TURN.)

PROCEDURE TURN [ICAO]– A maneuver in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Note 1: Procedure turns are designated "left" or "right" according to the direction of the initial turn.

Note 2: Procedure turns may be designated as being made either in level flight or while descending, according to the circumstances of each individual approach procedure.

PROCEDURE TURN INBOUND- That point of a procedure turn maneuver where course reversal has been completed and an aircraft is established inbound on the intermediate approach segment or final approach course. A report of "procedure turn inbound" is normally used by ATC as a position report for separation purposes.

(See FINAL APPROACH COURSE.) (See PROCEDURE TURN.) (See SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE.)

PROFILE DESCENT- An uninterrupted descent (except where level flight is required for speed adjustment; e.g., 250 knots at 10,000 feet MSL) from cruising altitude/level to interception of a glideslope or to a minimum altitude specified for the initial or intermediate approach segment of a nonprecision instrument approach. The profile descent normally terminates at the approach gate or where the glideslope or other appropriate minimum altitude is intercepted.

PROGRESS REPORT-

(See POSITION REPORT.)

PROGRESSIVE TAXI- Precise taxi instructions given to a pilot unfamiliar with the airport or issued in stages as the aircraft proceeds along the taxi route.

PROHIBITED AREA-

(See SPECIAL USE AIRSPACE.) (See ICAO term PROHIBITED AREA.)

PROHIBITED AREA [ICAO]– An airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.

PROMINENT OBSTACLE- An obstacle that meets one or more of the following conditions:

a. An obstacle which stands out beyond the adjacent surface of surrounding terrain and immediately projects a noticeable hazard to aircraft in flight.

b. An obstacle, not characterized as low and close in, whose height is no less than 300 feet above the departure end of takeoff runway (DER) elevation, is within 10NM from the DER, and that penetrates that airport/heliport's diverse departure obstacle clearance surface (OCS).

c. An obstacle beyond 10NM from an airport/heliport that requires an obstacle departure procedure (ODP) to ensure obstacle avoidance.

(See OBSTACLE.) (See OBSTRUCTION.)

PROPOSED BOUNDARY CROSSING TIME– Each center has a PBCT parameter for each internal airport. Proposed internal flight plans are transmitted to the adjacent center if the flight time along the proposed route from the departure airport to the center boundary is less than or equal to the value of PBCT or if airport adaptation specifies transmission regardless of PBCT.

PROPOSED DEPARTURE TIME– The time that the aircraft expects to become airborne.

PROTECTED AIRSPACE- The airspace on either side of an oceanic route/track that is equal to one-half

the lateral separation minimum except where reduction of protected airspace has been authorized.

PROTECTED SEGMENT- The protected segment is a segment on the amended TFM route that is to be inhibited from automatic adapted route alteration by ERAM.

PT-

(See PROCEDURE TURN.)

РТР-

(See POINT-TO-POINT.)

PTS-

(See POLAR TRACK STRUCTURE.)

PUBLISHED INSTRUMENT APPROACH PROCEDURE VISUAL SEGMENT- A segment on an IAP chart annotated as "Fly Visual to Airport" or "Fly Visual." A dashed arrow will indicate the visual flight path on the profile and plan view with an associated note on the approximate heading and distance. The visual segment should be flown as a dead reckoning course while maintaining visual conditions.

PUBLISHED ROUTE- A route for which an IFR altitude has been established and published; e.g., Federal Airways, Jet Routes, Area Navigation Routes, Specified Direct Routes.

PWS-

(See PREDICTIVE WIND SHEAR ALERT SYSTEM.)

R

RADAR- A device which, by measuring the time interval between transmission and reception of radio pulses and correlating the angular orientation of the radiated antenna beam or beams in azimuth and/or elevation, provides information on range, azimuth, and/or elevation of objects in the path of the transmitted pulses.

a. Primary Radar– A radar system in which a minute portion of a radio pulse transmitted from a site is reflected by an object and then received back at that site for processing and display at an air traffic control facility.

b. Secondary Radar/Radar Beacon (ATCRBS)– A radar system in which the object to be detected is fitted with cooperative equipment in the form of a radio receiver/transmitter (transponder). Radar pulses transmitted from the searching transmitter/receiver (interrogator) site are received in the cooperative equipment and used to trigger a distinctive transmission from the transponder. This reply transmission, rather than a reflected signal, is then received back at the transmitter/receiver site for processing and display at an air traffic control facility.

(See INTERROGATOR.) (See TRANSPONDER.) (See ICAO term RADAR.) (Refer to AIM.)

RADAR [ICAO]- A radio detection device which provides information on range, azimuth and/or elevation of objects.

a. Primary Radar- Radar system which uses reflected radio signals.

b. Secondary Radar– Radar system wherein a radio signal transmitted from a radar station initiates the transmission of a radio signal from another station.

RADAR ADVISORY- The provision of advice and information based on radar observations.

(See ADVISORY SERVICE.)

RADAR ALTIMETER-(See RADIO ALTIMETER.) RADAR APPROACH– An instrument approach procedure which utilizes Precision Approach Radar (PAR) or Airport Surveillance Radar (ASR).

(See AIRPORT SURVEILLANCE RADAR.) (See INSTRUMENT APPROACH PROCEDURE.) (See PRECISION APPROACH RADAR.) (See SURVEILLANCE APPROACH.) (See ICAO term RADAR APPROACH.) (Refer to AIM.)

RADAR APPROACH [ICAO] – An approach, executed by an aircraft, under the direction of a radar controller.

RADAR APPROACH CONTROL FACILITY– A terminal ATC facility that uses radar and nonradar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility.

(See APPROACH CONTROL SERVICE.)

a. Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/or military airports in a terminal area. The facility may provide services of a ground controlled approach (GCA); i.e., ASR and PAR approaches. A radar approach control facility may be operated by FAA, USAF, US Army, USN, USMC, or jointly by FAA and a military service. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

1. Army Radar Approach Control (ARAC) (Army).

2. Radar Air Traffic Control Facility (RATCF) (Navy/FAA).

3. Radar Approach Control (RAPCON) (Air Force/FAA).

4. Terminal Radar Approach Control (TRACON) (FAA).

5. Air Traffic Control Tower (ATCT) (FAA). (Only those towers delegated approach control authority.)

RADAR ARRIVAL- An aircraft arriving at an airport served by a radar facility and in radar contact with the facility.

(See NONRADAR.)

RADAR BEACON-(See RADAR.)

RADAR CLUTTER [ICAO] – The visual indication on a radar display of unwanted signals.

RADAR CONTACT-

a. Used by ATC to inform an aircraft that it is identified using an approved ATC surveillance source on an air traffic controller's display and that radar flight following will be provided until radar service is terminated. Radar service may also be provided within the limits of necessity and capability. When a pilot is informed of "radar contact," he/she automatically discontinues reporting over compulsory reporting points.

(See ATC SURVEILLANCE SOURCE.) (See RADAR CONTACT LOST.) (See RADAR FLIGHT FOLLOWING.) (See RADAR SERVICE.) (See RADAR SERVICE TERMINATED.) (Refer to AIM.)

b. The term used to inform the controller that the aircraft is identified and approval is granted for the aircraft to enter the receiving controllers airspace.

(See ICAO term RADAR CONTACT.)

RADAR CONTACT [ICAO]– The situation which exists when the radar blip or radar position symbol of a particular aircraft is seen and identified on a radar display.

RADAR CONTACT LOST– Used by ATC to inform a pilot that the surveillance data used to determine the aircraft's position is no longer being received, or is no longer reliable and radar service is no longer being provided. The loss may be attributed to several factors including the aircraft merging with weather or ground clutter, the aircraft operating below radar line of sight coverage, the aircraft entering an area of poor radar return, failure of the aircraft's equipment, or failure of the surveillance equipment.

(See CLUTTER.) (See RADAR CONTACT.)

RADAR ENVIRONMENT- An area in which radar service may be provided.

(See ADDITIONAL SERVICES.) (See RADAR CONTACT.) (See RADAR SERVICE.) (See TRAFFIC ADVISORIES.) RADAR FLIGHT FOLLOWING– The observation of the progress of radar identified aircraft, whose primary navigation is being provided by the pilot, wherein the controller retains and correlates the aircraft identity with the appropriate target or target symbol displayed on the radar scope.

(See RADAR CONTACT.) (See RADAR SERVICE.) (Refer to AIM.)

RADAR IDENTIFICATION- The process of ascertaining that an observed radar target is the radar return from a particular aircraft.

(See RADAR CONTACT.) (See RADAR SERVICE.) (See ICAO term RADAR IDENTIFICATION.)

RADAR IDENTIFIED AIRCRAFT– An aircraft, the position of which has been correlated with an observed target or symbol on the radar display.

(See RADAR CONTACT.) (See RADAR CONTACT LOST.)

RADAR MONITORING-(See RADAR SERVICE.)

RADAR NAVIGATIONAL GUIDANCE-(See RADAR SERVICE.)

RADAR POINT OUT– An action taken by a controller to transfer the radar identification of an aircraft to another controller if the aircraft will or may enter the airspace or protected airspace of another controller and radio communications will not be transferred.

RADAR REQUIRED- A term displayed on charts and approach plates and included in FDC NOTAMs to alert pilots that segments of either an instrument approach procedure or a route are not navigable because of either the absence or unusability of a NAVAID. The pilot can expect to be provided radar navigational guidance while transiting segments labeled with this term.

(See RADAR ROUTE.) (See RADAR SERVICE.)

RADAR ROUTE- A flight path or route over which an aircraft is vectored. Navigational guidance and altitude assignments are provided by ATC.

(See FLIGHT PATH.) (See ROUTE.)

RADAR SEPARATION-(See RADAR SERVICE.) RADAR SERVICE- A term which encompasses one or more of the following services based on the use of radar which can be provided by a controller to a pilot of a radar identified aircraft.

a. Radar Monitoring– The radar flight-following of aircraft, whose primary navigation is being performed by the pilot, to observe and note deviations from its authorized flight path, airway, or route. When being applied specifically to radar monitoring of instrument approaches; i.e., with precision approach radar (PAR) or radar monitoring of simultaneous ILS,RNAV and GLS approaches, it includes advice and instructions whenever an aircraft nears or exceeds the prescribed PAR safety limit or simultaneous ILS RNAV and GLS no transgression zone.

(See ADDITIONAL SERVICES.) (See TRAFFIC ADVISORIES.)

b. Radar Navigational Guidance– Vectoring aircraft to provide course guidance.

c. Radar Separation– Radar spacing of aircraft in accordance with established minima.

(See ICAO term RADAR SERVICE.)

RADAR SERVICE [ICAO] – Term used to indicate a service provided directly by means of radar.

a. Monitoring– The use of radar for the purpose of providing aircraft with information and advice relative to significant deviations from nominal flight path.

b. Separation– The separation used when aircraft position information is derived from radar sources.

RADAR SERVICE TERMINATED– Used by ATC to inform a pilot that he/she will no longer be provided any of the services that could be received while in radar contact. Radar service is automatically terminated, and the pilot is not advised in the following cases:

a. An aircraft cancels its IFR flight plan, except within Class B airspace, Class C airspace, a TRSA, or where Basic Radar service is provided.

b. An aircraft conducting an instrument, visual, or contact approach has landed or has been instructed to change to advisory frequency.

c. An arriving VFR aircraft, receiving radar service to a tower-controlled airport within Class B airspace, Class C airspace, a TRSA, or where sequencing service is provided, has landed; or to all

other airports, is instructed to change to tower or advisory frequency.

d. An aircraft completes a radar approach.

RADAR SURVEILLANCE– The radar observation of a given geographical area for the purpose of performing some radar function.

RADAR TRAFFIC ADVISORIES – Advisories issued to alert pilots to known or observed radar traffic which may affect the intended route of flight of their aircraft.

(See TRAFFIC ADVISORIES.)

RADAR TRAFFIC INFORMATION SERVICE-(See TRAFFIC ADVISORIES.)

RADAR VECTORING [ICAO]– Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

RADIAL- A magnetic bearing extending from a VOR/VORTAC/TACAN navigation facility.

RADIO-

a. A device used for communication.

b. Used to refer to a flight service station; e.g., "Seattle Radio" is used to call Seattle FSS.

RADIO ALTIMETER- Aircraft equipment which makes use of the reflection of radio waves from the ground to determine the height of the aircraft above the surface.

RADIO BEACON-

(See NONDIRECTIONAL BEACON.)

RADIO DETECTION AND RANGING-(See RADAR.)

RADIO MAGNETIC INDICATOR– An aircraft navigational instrument coupled with a gyro compass or similar compass that indicates the direction of a selected NAVAID and indicates bearing with respect to the heading of the aircraft.

RAIS-

(See REMOTE AIRPORT INFORMATION SERVICE.)

RAMP-

(See APRON.)

RANDOM ALTITUDE– An altitude inappropriate for direction of flight and/or not in accordance with FAAO JO 7110.65, Para 4–5–1, VERTICAL SEPARATION MINIMA. RANDOM ROUTE- Any route not established or charted/published or not otherwise available to all users.

RC-

(See ROAD RECONNAISSANCE.)

RCAG-

(See REMOTE COMMUNICATIONS AIR/GROUND FACILITY.)

RCC-

(See RESCUE COORDINATION CENTER.)

RCO-

(See REMOTE COMMUNICATIONS OUTLET.)

RCR-

(See RUNWAY CONDITION READING.)

READ BACK- Repeat my message back to me.

RECEIVER AUTONOMOUS INTEGRITY MON-ITORING (RAIM)– A technique whereby a civil GNSS receiver/processor determines the integrity of the GNSS navigation signals without reference to sensors or non-DoD integrity systems other than the receiver itself. This determination is achieved by a consistency check among redundant pseudorange measurements.

RECEIVING CONTROLLER- A controller/facility receiving control of an aircraft from another controller/facility.

RECEIVING FACILITY-(See RECEIVING CONTROLLER.)

RECONFORMANCE– The automated process of bringing an aircraft's Current Plan Trajectory into conformance with its track.

REDUCE SPEED TO (SPEED)-(See SPEED ADJUSTMENT.)

REIL-

(See RUNWAY END IDENTIFIER LIGHTS.)

RELEASE TIME- A departure time restriction issued to a pilot by ATC (either directly or through an authorized relay) when necessary to separate a departing aircraft from other traffic.

(See ICAO term RELEASE TIME.)

RELEASE TIME [ICAO]– Time prior to which an aircraft should be given further clearance or prior to which it should not proceed in case of radio failure.

REMOTE AIRPORT INFORMATION SERVICE (RAIS)– A temporary service provided by facilities, which are not located on the landing airport, but have communication capability and automated weather reporting available to the pilot at the landing airport.

REMOTE COMMUNICATIONS AIR/GROUND FACILITY– An unmanned VHF/UHF transmitter/ receiver facility which is used to expand ARTCC air/ground communications coverage and to facilitate direct contact between pilots and controllers. RCAG facilities are sometimes not equipped with emergency frequencies 121.5 MHz and 243.0 MHz.

(Refer to AIM.)

REMOTE COMMUNICATIONS OUTLET- An unmanned communications facility remotely controlled by air traffic personnel. RCOs serve FSSs. RTRs serve terminal ATC facilities. An RCO or RTR may be UHF or VHF and will extend the communication range of the air traffic facility. There are several classes of RCOs and RTRs. The class is determined by the number of transmitters or receivers. Classes A through G are used primarily for air/ground purposes. RCO and RTR class O facilities are nonprotected outlets subject to undetected and prolonged outages. RCO (O's) and RTR (O's) were established for the express purpose of providing ground-to-ground communications between air traffic control specialists and pilots located at a satellite airport for delivering en route clearances, issuing departure authorizations, and acknowledging instrument flight rules cancellations or departure/landing times. As a secondary function, they may be used for advisory purposes whenever the aircraft is below the coverage of the primary air/ground frequency.

REMOTE TRANSMITTER/RECEIVER-(See REMOTE COMMUNICATIONS OUTLET.)

REPORT– Used to instruct pilots to advise ATC of specified information; e.g., "Report passing Hamilton VOR."

REPORTING POINT- A geographical location in relation to which the position of an aircraft is reported.

(See COMPULSORY REPORTING POINTS.) (See ICAO term REPORTING POINT.) (Refer to AIM.)

REPORTING POINT [ICAO]– A specified geographical location in relation to which the position of an aircraft can be reported.

S

SAA-

(See SPECIAL ACTIVITY AIRSPACE.)

SAFETY ALERT– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain, obstructions, or other aircraft. The controller may discontinue the issuance of further alerts if the pilot advises he/she is taking action to correct the situation or has the other aircraft in sight.

a. Terrain/Obstruction Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware the aircraft is at an altitude which, in the controller's judgment, places the aircraft in unsafe proximity to terrain/obstructions; e.g., "Low Altitude Alert, check your altitude immediately."

b. Aircraft Conflict Alert– A safety alert issued by ATC to aircraft under their control if ATC is aware of an aircraft that is not under their control at an altitude which, in the controller's judgment, places both aircraft in unsafe proximity to each other. With the alert, ATC will offer the pilot an alternate course of action when feasible; e.g., "Traffic Alert, advise you turn right heading zero niner zero or climb to eight thousand immediately."

Note: The issuance of a safety alert is contingent upon the capability of the controller to have an awareness of an unsafe condition. The course of action provided will be predicated on other traffic under ATC control. Once the alert is issued, it is solely the pilot's prerogative to determine what course of action, if any, he/she will take.

SAFETY LOGIC SYSTEM- A software enhancement to ASDE-3, ASDE-X, and ASSC, that predicts the path of aircraft landing and/or departing, and/or vehicular movements on runways. Visual and aural alarms are activated when the safety logic projects a potential collision. The Airport Movement Area Safety System (AMASS) is a safety logic system enhancement to the ASDE-3. The Safety Logic System for ASDE-X and ASSC is an integral part of the software program.

SAFETY LOGIC SYSTEM ALERTS-

a. ALERT– An actual situation involving two real safety logic tracks (aircraft/aircraft, aircraft/vehicle,

or aircraft/other tangible object) that safety logic has predicted will result in an imminent collision, based upon the current set of Safety Logic parameters.

b. FALSE ALERT-

1. Alerts generated by one or more false surface-radar targets that the system has interpreted as real tracks and placed into safety logic.

2. Alerts in which the safety logic software did not perform correctly, based upon the design specifications and the current set of Safety Logic parameters.

3. The alert is generated by surface radar targets caused by moderate or greater precipitation.

c. NUISANCE ALERT– An alert in which one or more of the following is true:

1. The alert is generated by a known situation that is not considered an unsafe operation, such as LAHSO or other approved operations.

2. The alert is generated by inaccurate secondary radar data received by the Safety Logic System.

3. One or more of the aircraft involved in the alert is not intending to use a runway (for example, helicopter, pipeline patrol, non–Mode C overflight, etc.).

d. VALID NON-ALERT- A situation in which the safety logic software correctly determines that an alert is not required, based upon the design specifications and the current set of Safety Logic parameters.

e. INVALID NON-ALERT- A situation in which the safety logic software did not issue an alert when an alert was required, based upon the design specifications.

SAIL BACK– A maneuver during high wind conditions (usually with power off) where float plane movement is controlled by water rudders/opening and closing cabin doors.

SAME DIRECTION AIRCRAFT- Aircraft are operating in the same direction when:

a. They are following the same track in the same direction; or

b. Their tracks are parallel and the aircraft are flying in the same direction; or

c. Their tracks intersect at an angle of less than 45 degrees.

SAR-

(See SEARCH AND RESCUE.)

SAY AGAIN– Used to request a repeat of the last transmission. Usually specifies transmission or portion thereof not understood or received; e.g., "Say again all after ABRAM VOR."

SAY ALTITUDE – Used by ATC to ascertain an aircraft's specific altitude/flight level. When the aircraft is climbing or descending, the pilot should state the indicated altitude rounded to the nearest 100 feet.

SAY HEADING– Used by ATC to request an aircraft heading. The pilot should state the actual heading of the aircraft.

SCHEDULED TIME OF ARRIVAL (STA)– A STA is the desired time that an aircraft should cross a certain point (landing or metering fix). It takes other traffic and airspace configuration into account. A STA time shows the results of the TBFM scheduler that has calculated an arrival time according to parameters such as optimized spacing, aircraft performance, and weather.

SDF-

(See SIMPLIFIED DIRECTIONAL FACILITY.)

SEA LANE- A designated portion of water outlined by visual surface markers for and intended to be used by aircraft designed to operate on water.

SEARCH AND RESCUE- A service which seeks missing aircraft and assists those found to be in need of assistance. It is a cooperative effort using the facilities and services of available Federal, state and local agencies. The U.S. Coast Guard is responsible for coordination of search and rescue for the Maritime Region, and the U.S. Air Force is responsible for search and rescue for the Inland Region. Information pertinent to search and rescue should be passed through any air traffic facility or be transmitted directly to the Rescue Coordination Center by telephone.

(See FLIGHT SERVICE STATION.) (See RESCUE COORDINATION CENTER.) (Refer to AIM.)

SEARCH AND RESCUE FACILITY- A facility responsible for maintaining and operating a search and rescue (SAR) service to render aid to persons and property in distress. It is any SAR unit, station, NET, or other operational activity which can be usefully employed during an SAR Mission; e.g., a Civil Air Patrol Wing, or a Coast Guard Station.

(See SEARCH AND RESCUE.)

SECNOT-

(See SECURITY NOTICE.)

SECONDARY RADAR TARGET- A target derived from a transponder return presented on a radar display.

SECTIONAL AERONAUTICAL CHARTS-(See AERONAUTICAL CHART.)

SECTOR LIST DROP INTERVAL- A parameter number of minutes after the meter fix time when arrival aircraft will be deleted from the arrival sector list.

SECURITY NOTICE (SECNOT) – A SECNOT is a request originated by the Air Traffic Security Coordinator (ATSC) for an extensive communications search for aircraft involved, or suspected of being involved, in a security violation, or are considered a security risk. A SECNOT will include the aircraft identification, search area, and expiration time. The search area, as defined by the ATSC, could be a single airport, multiple airports, a radius of an airport or fix, or a route of flight. Once the expiration time has been reached, the SECNOT is considered to be cancelled.

SECURITY SERVICES AIRSPACE – Areas established through the regulatory process or by NOTAM, issued by the Administrator under title 14, CFR, sections 99.7, 91.141, and 91.139, which specify that ATC security services are required; i.e., ADIZ or temporary flight rules areas.

SEE AND AVOID- When weather conditions permit, pilots operating IFR or VFR are required to observe and maneuver to avoid other aircraft. Right-of-way rules are contained in 14 CFR Part 91.

SEGMENTED CIRCLE- A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

(Refer to AIM.)

SEGMENTS OF AN INSTRUMENT APPROACH PROCEDURE- An instrument approach procedure may have as many as four separate segments depending on how the approach procedure is structured.

a. Initial Approach– The segment between the initial approach fix and the intermediate fix or the

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TACAN-

(See TACTICAL AIR NAVIGATION.)

TACAN-ONLY AIRCRAFT– An aircraft, normally military, possessing TACAN with DME but no VOR navigational system capability. Clearances must specify TACAN or VORTAC fixes and approaches.

TACTICAL AIR NAVIGATION- An ultra-high frequency electronic rho-theta air navigation aid which provides suitably equipped aircraft a continuous indication of bearing and distance to the TACAN station.

(See VORTAC.) (Refer to AIM.)

TAILWIND- Any wind more than 90 degrees to the longitudinal axis of the runway. The magnetic direction of the runway shall be used as the basis for determining the longitudinal axis.

TAKEOFF AREA-(See LANDING AREA.)

TAKEOFF DISTANCE AVAILABLE (TODA)– The takeoff run available plus the length of any remaining runway or clearway beyond the far end of the takeoff run available.

(See ICAO term TAKEOFF DISTANCE AVAILABLE.)

TAKEOFF DISTANCE AVAILABLE [ICAO]– The length of the takeoff run available plus the length of the clearway, if provided.

TAKEOFF HOLD LIGHTS (THL)– The THL system is composed of in-pavement lighting in a double, longitudinal row of lights aligned either side of the runway centerline. The lights are focused toward the arrival end of the runway at the "line up and wait" point, and they extend for 1,500 feet in front of the holding aircraft. Illuminated red lights indicate to an aircraft in position for takeoff or rolling that it is unsafe to takeoff because the runway is occupied or about to be occupied by an aircraft or vehicle.

TAKEOFF ROLL – The process whereby an aircraft is aligned with the runway centerline and the aircraft is moving with the intent to take off. For helicopters,

this pertains to the act of becoming airborne after departing a takeoff area.

TAKEOFF RUN AVAILABLE (TORA) – The runway length declared available and suitable for the ground run of an airplane taking off.

(See ICAO term TAKEOFF RUN AVAILABLE.)

TAKEOFF RUN AVAILABLE [ICAO] – The length of runway declared available and suitable for the ground run of an aeroplane take-off.

TARGET- The indication shown on an analog display resulting from a primary radar return or a radar beacon reply.

(See ASSOCIATED.) (See DIGITAL TARGET.) (See DIGITIZED RADAR TARGET.) (See FUSED TARGET) (See PRIMARY RADAR TARGET.) (See RADAR.) (See SECONDARY RADAR TARGET.) (See TARGET SYMBOL.) (See ICAO term TARGET.) (See UNASSOCIATED.)

TARGET [ICAO]- In radar:

a. Generally, any discrete object which reflects or retransmits energy back to the radar equipment.

b. Specifically, an object of radar search or surveillance.

TARGET RESOLUTION- A process to ensure that correlated radar targets do not touch. Target resolution must be applied as follows:

a. Between the edges of two primary targets or the edges of the ASR-9/11 primary target symbol.

b. Between the end of the beacon control slash and the edge of a primary target.

c. Between the ends of two beacon control slashes.

- Note 1: Mandatory traffic advisories and safety alerts must be issued when this procedure is used.
- Note 2: This procedure must not be used when utilizing mosaic radar systems or multi-sensor mode.

TARGET SYMBOL- A computer-generated indication shown on a radar display resulting from a primary radar return or a radar beacon reply. TARMAC DELAY– The holding of an aircraft on the ground either before departure or after landing with no opportunity for its passengers to deplane.

TARMAC DELAY AIRCRAFT- An aircraft whose pilot-in-command has requested to taxi to the ramp, gate, or alternate deplaning area to comply with the Three-hour Tarmac Rule.

TARMAC DELAY REQUEST- A request by the pilot-in-command to taxi to the ramp, gate, or alternate deplaning location to comply with the Three-hour Tarmac Rule.

TAS-

(See TERMINAL AUTOMATION SYSTEMS.)

TAWS-

(See TERRAIN AWARENESS WARNING SYSTEM.)

TAXI- The movement of an airplane under its own power on the surface of an airport (14 CFR Section 135.100 [Note]). Also, it describes the surface movement of helicopters equipped with wheels.

(See AIR TAXI.) (See HOVER TAXI.) (Refer to 14 CFR Section 135.100.) (Refer to AIM.)

TAXI PATTERNS– Patterns established to illustrate the desired flow of ground traffic for the different runways or airport areas available for use.

TCAS-

(See TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM.)

TCH-

(See THRESHOLD CROSSING HEIGHT.)

TCLT-

(See TENTATIVE CALCULATED LANDING TIME.)

TDLS-

(See TERMINAL DATA LINK SYSTEM.)

TDZE-

(See TOUCHDOWN ZONE ELEVATION.)

TELEPHONE INFORMATION BRIEFING SER-VICE- A continuous telephone recording of meteorological and/or aeronautical information.

(Refer to AIM.)

TEMPORARY FLIGHT RESTRICTION (TFR) – A

TFR is a regulatory action issued by the FAA via the U.S. NOTAM System, under the authority of United States Code, Title 49. TFRs are issued within the sovereign airspace of the United States and its territories to restrict certain aircraft from operating within a defined area on a temporary basis to protect persons or property in the air or on the ground. While not all inclusive, TFRs may be issued for disaster or hazard situations such as: toxic gas leaks or spills, fumes from flammable agents, aircraft accident/incident sites, aviation or ground resources engaged in wildfire suppression, or aircraft relief activities following a disaster. TFRs may also be issued in support of VIP movements; for reasons of national security; or when determined necessary for the management of air traffic in the vicinity of aerial demonstrations or major sporting events. NAS users or other interested parties should contact a FSS for TFR information. Additionally, TFR information can be found in automated briefings, NOTAM publications, and on the internet at http://www.faa.gov. The FAA also distributes TFR information to aviation user groups for further dissemination.

TENTATIVE CALCULATED LANDING TIME- A projected time calculated for adapted vertex for each arrival aircraft based upon runway configuration, airport acceptance rate, airport arrival delay period, and other metered arrival aircraft. This time is either the VTA of the aircraft or the TCLT/ACLT of the previous aircraft plus the AAI, whichever is later. This time will be updated in response to an aircraft's progress and its current relationship to other arrivals.

TERMINAL AREA- A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL AREA FACILITY– A facility providing air traffic control service for arriving and departing IFR, VFR, Special VFR, and on occasion en route aircraft.

(See APPROACH CONTROL FACILITY.) (See TOWER.)

TERMINAL AUTOMATION SYSTEMS (TAS)– TAS is used to identify the numerous automated tracking systems including ARTS IIE, ARTS IIIA, ARTS IIIE, STARS, and MEARTS.

TERMINAL DATA LINK SYSTEM (TDLS)– A system that provides Digital Automatic Terminal Information Service (D–ATIS) both on a specified

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BRIEFING GUIDE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

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1. PARAGRAPH NUMBER AND TITLE: 1–2–6. ABBREVIATIONS

2. BACKGROUND: FAA Order 8260.40B, Flight Management System (FMS) Instrument Procedures Development was cancelled in January 2013. All of the applicable content has been incorporated into FAA Order 8260.58, United States Standard for Performance–Based Navigation (PBN) Instrument Procedure Design.

3. CHANGE:

<u>OLD</u>	<u>NEW</u>
1-2-6. ABBREVIATIONS	1-2-6. ABBREVIATIONS
FMSP – Flight Management System Procedure	Delete

1. PARAGRAPH NUMBER AND TITLE:

1–2–6. ABBREVIATIONS 3–4–20. RUNWAY STATUS LIGHTS (RWSL) 3–6–5. RADAR–ONLY MODE

2. BACKGROUND: The Federal Aviation Administration (FAA) Surveillance and Broadcast Services (SBS) Program Office (PO) intends to implement the Airport Surface Surveillance Capability (ASSC) for situational awareness and surveillance of the surface movement area as well as approach and departure routes at select airports within the National Airspace System (NAS). ASSC will augment visual observation of landing or departing aircraft, and aircraft or vehicle traffic on the surface movement area.

3. CHANGE:

<u>OLD</u>

1–2–6. ABBREVIATIONS Add

<u>OLD</u>

3-4-20. RUNWAY STATUS LIGHTS (RWSL)

Title through a1

2. If a portion of the runway is not visible from the tower, ATC must visually scan the <u>ASDE-X</u> system. If the runway is observed to be clear and the lights are still illuminated, then the lights must be turned off and clearance re-issued.

<u>OLD</u>

3-6-5. RADAR-ONLY MODE

Radar-only mode is an enhancement of the ASDE-X system which allows the system to stay operational with safety logic processing, despite a critical fault in the Multilateration (MLAT) subsystem. The system stays in full core alert status under radar-only mode without data block capability.

<u>NEW</u>

1–2–6. ABBREVIATIONS <u>ASSC – Airport Surface Surveillance</u> <u>Capability</u>

<u>NEW</u>

3-4-20. RUNWAY STATUS LIGHTS (RWSL)

No Change

2. If a portion of the runway is not visible from the tower, ATC must visually scan the <u>ASDE</u> system. If the runway is observed to be clear and the lights are still illuminated, then the lights must be turned off and clearance re-issued.

<u>NEW</u>

3-6-5. RADAR-ONLY MODE

Radar-only mode is an enhancement of the ASDE-X <u>and ASSC</u> systems which allows the system to stay operational with safety logic processing, despite a critical fault in the Multilateration (MLAT) subsystem. The system stays in full core alert status under radar-only mode without data block capability.

1. PARAGRAPH NUMBER AND TITLE:

2–1–2. DUTY PRIORITY

2–1–4. OPERATIONAL PRIORITY

2. BACKGROUND: The TOP 5 is a quantifiable list of hazards that contribute to the highest risk in the National Airspace System. It is the culmination of the ATO's proactive safety management activities – valuing input from the frontline employees, deploying technology to gather data, improving analysis to identify risk and embracing correction to mitigate risk. In 2015, one of the Top 5 items involved weather dissemination and the need to solicit and disseminate significant PIREPS. In 2016, the 7110.65 Handbook Revision Steering Committee proposed adding a subparagraph to Paragraph 2-1-2, Duty Priority, clearly identifying solicitation and dissemination of weather as a duty priority. Additionally, the committee proposed a change to Paragraph 2-1-4, Operational Priority, to emphasize those flights listed in the paragraph 2-1-4, are not listed in a hierarchical order of priority.

3. CHANGE:

<u>OLD</u> 2–1–2. DUTY PRIORITY

Title through **b** *REFERENCE*

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

Add

Add

<u>NEW</u> 2–1–2. DUTY PRIORITY

No Change

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

<u>NOTE-</u>

<u>Controllers are responsible to become familiar with and</u> <u>stay aware of current weather information needed to</u> <u>perform ATC duties.</u>

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

<u>OLD</u>

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 through a *REFERENCE*

NEW

2-1-4. OPERATIONAL PRIORITY

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

No Change

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 <u>maximum assistance to SAR aircraft</u> performing a SAR mission.

<u>REFERENCE–</u> FAAO JO 7110.65, Para 10–1–3, Providing Assistance.

Add

Add

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-

<u>As used herein the terms presidential aircraft and entourage include aircraft and entourage of the President,</u> <u>Vice President, or other public figures when designated</u> 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.

Add

e. Provide <u>special handling</u>, as required to <u>expedite Flight Check aircraft</u>.

b. Provide priority **handling** 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 **handling** 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-

<u>G</u>ood judgment must be used in each situation to facilitate the most expeditious movement of a MEDEVAC aircraft.

c. Provide priority handling and 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.

Delete

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-

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

d. <u>Provide priority handling and maximum</u> assistance to SAR aircraft performing a SAR mission.

Delete

Delete

<u>REFERENCE-</u>

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

e. Provide priority handling and maximum assistance to expedite the movement of interceptor aircraft on active air defense missions until the unknown aircraft is identified.
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. <u>Expedite movement of</u> 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 <u>expeditious</u> handling <u>for</u> 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 <u>expeditious</u> handling <u>of</u> 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 <u>special</u> handling <u>for</u> 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 <u>maximum assistance to expedite the</u> <u>movement of interceptor aircraft on active air</u> <u>defense missions until the unknown aircraft is</u> <u>identified.</u>

Add

Add

Delete

Delete

f. <u>Provide priority handling to NIGHT WATCH</u> aircraft when NAOC (pronounced NA–YOCK) is indicated in the remarks section of the flight plan or in air/ground communications.

No Change

REFERENCE-FAA <u>Order</u> JO 7610.4, Para 12–1–1 Applications.

g. Provide **<u>priority</u>** handling <u>to</u> any civil or military aircraft using the code name "FLYNET."

REFERENCE-

FAA <u>Order</u> JO 7110.65, Para 9–2–6 FLYNET. FAA <u>Orde</u>r JO 7610.4, Para 12–4–1 "FLYNET" Flights, Nuclear Emergency Teams.

h. Provide **priority** handling **to** 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.

No Change

i. Provide **priority** handling **to** USAF aircraft engaged in aerial sampling missions using the code name "SAMP."

REFERENCE-

FAA <u>Order</u> JO 7110.65, Para 9–2–17, SAMP. FAA <u>Order</u> JO 7210.3, Para 5–3–4, Atmosphere Sampling For Nuclear Contamination. FAA <u>Order</u> JO 7610.4, Para 12–4–3, Atmospheric Sampling For Nuclear Contamination.

j. Provide priority handling to Special Air Mission aircraft when SCOOT is indicated in the remarks section of the flight plan or used in air/ground communications.

<u>NOTE-</u>

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

<u>REFERENCE–</u> FAA Order JO 7610.4, Para 12–6–1, Applications. **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.

<u>NOTE-</u>

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.

<u>REFERENCE-</u>

FAAO JO 7610.4, Para 12-7-1, Applications.

I. <u>When requested, provide priority handling to</u> <u>TEAL and NOAA mission aircraft.</u>

<u>NOTE-</u>

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.

Add

<u>REFERENCE-</u> FAAO JO 7110.65, Para 9–2–19, Weather Reconnaissance Flights.

m. <u>IFR aircraft must have priority over SVFR aircraft.</u>

Add

<u>REFERENCE-</u>

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

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

k. <u>When requested, provide priority handling</u> to TEAL and NOAA mission aircraft.

<u>NOTE-</u>

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-

FAA Order JO 7110.65, Para 9–2–19, Weather Reconnaissance Flights.

I. <u>Provide priority handling to expedite the</u> <u>movement of OPEN SKIES Treaty observation</u> <u>and demonstration (F and D) flights.</u>

<u>NOTE-</u>

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

1. Emergencies

2. Aircraft directly involved in presidential movement.

3. Forces or activities in actual combat.

4. MEDEVAC, and active SAR missions.

5. <u>AIR EVAC and HOSP aircraft that have requested</u> priority handling.

REFERENCE-

FAA Order JO 7110.65, Para 9–2–22, OPEN SKIES Treaty Aircraft.

FAA Order JO 7210.3, Para 5–3–7, OPEN SKIES Treaty Aircraft Priority Flight (F and D). Treaty on OPEN SKIES, Treaty Document, 102–37.

m. <u>Provide priority handling, as required to</u> <u>expedite Flight Check aircraft.</u>

<u>NOTE-</u>

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-

FAA Order JO 7110.65, Para 9–1–3, Flight Check Aircraft.

n. <u>IFR aircraft must have priority over SVFR</u> aircraft.

<u>NOTE-</u>

 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. Delete

<u>REFERENCE-</u> <u>FAA Order JO 7110.65, Chapter 7, Section 5, Special VFR</u> (SVFR).

1. PARAGRAPH NUMBER AND TITLE: 2–3–8. AIRCRAFT EQUIPMENT SUFFIX

2. BACKGROUND: A document change proposal was submitted for FAA Order JO 7110.65W that would have added an additional aircraft equipment suffix, slant O (/O), for RVSM capable aircraft with an operating transponder but with no Mode C altitude reporting capability. Instead of adding the /O suffix, the published change incorrectly substituted the existing slant H (/H) suffix with the /O suffix. Additionally, as of the effective date of the order, the /O had not been adapted in the various automation platforms for use by air traffic control.

3. CHANGE:

<u>OLD</u>

2-3-8. AIRCRAFT EQUIPMENT SUFFIX

Title through c

d. Utilize aircraft equipment suffix <u>/O</u> to indicate "RVSM-capable, no transponder."

NOTE-

<u>*O*</u> is for ATC use only. Users are not authorized to file these suffixes.

<u>NEW</u>

2-3-8. AIRCRAFT EQUIPMENT SUFFIX

No Change

d. Utilize aircraft equipment suffix <u>/H</u> to indicate "RVSM-capable, no transponder."

NOTE-

<u>*H</u> is for ATC use only. Users are not authorized to file this suffix.*</u>

1. PARAGRAPH NUMBER AND TITLE:

2-6-1. FAMILIARIZATION

2-6-2. HAZARDOUS INFLIGHT WEATHER ADVISORY SERVICE (HIWAS)
2-6-3. PIREP INFORMATION
2-6-4. WEATHER AND CHAFF SERVICES
2-6-5. CALM WIND CONDITIONS
2-6-6. REPORTING WEATHER CONDITIONS
2-6-7. DISSEMINATING WEATHER INFORMATION

2. BACKGROUND: Weather issues continue to be a challenge in the National Airspace System. This topic was featured in the ATO Top 5 for the year of 2015. A collaborative workgroup was put together to review and clarify the Air Traffic Control (ATC) requirements for Weather Information in this order. This will improve and clarify the level of awareness and requirements concerning weather solicitation and dissemination procedures.

3. CHANGE:

<u>OLD</u>

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.

Add

<u>OLD</u>

2–6–2. <u>HAZARDOUS INFLIGHT WEATHER</u> <u>ADVISORY SERVICE (HIWAS)</u>

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.

<u>NOTE-</u>

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

PHRASEOLOGY-

ATTENTION ALL AIRCRAFT. HAZARDOUS WEATH-ER 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:

NEW

2-6-1. FAMILIARIZATION

<u>Controllers must</u> become familiar with pertinent weather information when coming on duty, and stay aware of current and <u>forecasted</u> weather information needed to perform ATC duties.

<u>NOTE-</u>

<u>Every phase of flight has the potential to be impacted by</u> <u>weather, and emphasis must be placed on gathering, re-</u> <u>porting and disseminating weather information.</u>

<u>NEW</u> Delete Delete

Delete

Delete

Delete

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

2. <u>Apply the same procedure when HIWAS</u> outlets, or outlets with radio coverage extending into your sector or airspace under your jurisdiction, are out of 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. <u>EN ROUTE.</u> ERAM. Controllers must electronically acknowledge hazardous weather information messages after appropriate action has been taken.

<u>NOTE-</u>

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

<u>OLD</u>

<u>2–6–3. PIREP INFORMATION</u>
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 ₂ S)
in the cabin, and other conditions pertinent to flight
<u>safety.</u>
REFERENCE-
FAAO JO 7110.65, Para 3–1–8, Low Level Wind Shear/Microburst
<u>Advisories.</u>
<u>FAAO JO /210.3, Para 0–3–1, Handling of SIGME1s, CWAs, and</u> PIPEPs
<u>I IKEI 3.</u> AIM. Para 7–5–9. Flight Operations in Volcanic Ash.
FAAO JO 7210.3, Para 10–3–1, SIGMET and PIREP Handling.

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

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

Delete

Delete

Delete

Delete

Delete

Delete

<u>NEW</u> Delete

Delete

Delete

TERMINAL. Ensure that at least one descent/climb-	Delete
out PIREP, including cloud base/s, top/s, and other	
related phenomena, is obtained each hour.	
services the requirements stated in TERMINAL	
above apply.	
2 Visibility (surface or aloft) at or less than	Delete
5 miles.	Delete
3. Thunderstorms and related phenomena.	Delete
4. <u>Turbulence of moderate degree or greater.</u>	Delete
5. Icing of light degree or greater.	Delete
6. Wind shear.	Delete
7. Volcanic ash clouds.	Delete
<u>NOTE-</u>	Delete
<u>Pilots may forward PIREPs regarding volcanic activity</u>	
using the format described in the volcanic Activity Re- porting Form (VAR) as depicted in the AIM. Appendix 2.	
8. Detection of sulfur gases (SO ₂ or H ₂ S)	Delete
associated with volcanic activity, in the cabin.	2
<u>NOTE-</u>	Delete
The smell of sulfur gases in the cockpit may indicate vol-	
canic 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	Delete
	Delete
PACO JO 7110.65, Para 3–3–5, Braking Action Advisories. P/CG Term– Braking Action Advisories.	Delete
b. Record with the PIREPs:	Delete
<u>1. Time.</u>	Delete
2. Aircraft position.	Delete
3. Type aircraft.	Delete
4. <u>Altitude.</u>	Delete
5. When the PIREP involves icing include:	Delete
(a) Icing type and intensity.	Delete
(b) Air temperature in which icing is	Delete
occurring.	
c. Obtain PIREPs directly from the pilot, or if the	Delete
PIREP has been requested by another facility, you	
may instruct the pilot to deliver it directly to that	

<u>et the pl</u> facility.

<u>PHRASEOLOGY–</u> <u>REQUEST/SAY FLIGHT CONDITIONS.</u>

Or if appropriate,

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

If necessary,

OVER (fix),

or

ALONG PRESENT ROUTE,

or

<u>BETWEEN (fix) AND (fix).</u>	
d. <u>Handle PIREPs as follows:</u>	Delete
1. Relay pertinent PIREP information to	Delete
concerned aircraft in a timely manner.	
2. <u>EN ROUTE</u> . Relay all operationally significant PIREPs to the facility weather	Delete
coordinator.	
3. <u>TERMINAL</u> . Relay all operationally significant PIREPs to:	Delete
(a) The appropriate intrafacility positions.	Delete
(b) The FLM/CIC for long line dissemination via an FAA approved electronic system (for example, AIS-R, or similar systems); or,	Delete
(c) Outside Alaska: The overlying ARTCC's Flight Data Unit for long-line dissemination; or,	Delete
(d) <u>Alaska Only: The FSS serving the area in</u> which the report was obtained.	Delete
<u>NOTE–</u> The FSS in Alaska is responsible for long line dissem- <u>ination.</u>	Delete
<u>REFERENCE –</u> FAAO JO 7110.65, Para 2–1–2, Duty Priority.	Delete
(e) Other concerned terminal or en route ATC facilities, including non-FAA facilities.	Delete
(f) Use the word gain and/or loss when describing to pilots the effects of wind shear on airspeed.	Delete

<u>EXAMPLE–</u> <u>"Delta Seven Twenty–one, a Boeing Seven Twenty–sev-</u> <u>en, previously reported wind shear, loss of Two Five knots</u> <u>at Four Hundred feet."</u>	Delete
<u>"U.S. Air Seventy-six, a D-C Niner, previously reported</u> wind shear, gain of Twenty-Five knots between Nin- er Hundred and Six Hundred feet, followed by a loss of Five Zero knots between Five Hundred feet and the sur- face."	
<u>REFERENCE–</u> <u>AIM, Para 7–1–24, Wind Shear PIREPs.</u>	Delete
OLD	NEW
2–6–4. WEATHER AND CHAFF SERVICES	Delete
<u>a.</u> <u>Issue pertinent information on</u> <u>observed/reported weather and chaff areas by</u> <u>defining the area of coverage in terms of azimuth</u> (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.	Delete
<u>NOTE-</u> <u>Weather significant to the safety of aircraft includes such</u> <u>conditions as funnel cloud activity, lines of thunder-</u> <u>storms, embedded thunderstorms, large hail, wind shear,</u> <u>microbursts, moderate to extreme turbulence (including</u> <u>CAT) and light to severe icing</u>	Delete
<u>EFFERENCE</u> <u>AIM, Paragraph 7-1-14, ATC Inflight Weather Avoidance</u> Assistance.	Delete
<u>PHRASEOLOGY–</u> <u>WEATHER/CHAFF AREA BETWEEN (num-</u> <u>ber)O'CLOCK AND (number) O'CLOCK (num-</u> <u>ber) MILES,</u>	Delete
<u>or</u>	
<u>(number) MILE BAND OF WEATHER/CHAFF FROM</u> (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.	Delete
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.	Delete
<u>1. LIGHT.</u>	Delete
<u>2. MODERATE.</u>	Delete

<u>**3.**</u> HEAVY.

4. EXTREME.	Delete
NOTE_	Delete
Weather and Radar Processor (WARP) does not display	Delete
light intensity.	
PHRASEOLOGY_	
AREA OF (Intensity) PRECIPITATION BETWEEN	
(number) O'CLOCK AND (number) O'CLOCK (num-	
ber) MILES, MOVING (direction) AT (number) KNOTS.	
TOPS (altitude). AREA IS (number) MILES IN	
DIAMETER.	
EXAMPLE-	Delete
1. "Area of extreme precipitation between eleven o'clock	Delete
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 dia-	
<u>meter."</u>	
<u>3. "Area of heavy to extreme precipitation between ten</u>	
<u>o'clock and two o'clock, one five miles. Area is two five</u>	
<u>miles in diameter."</u>	
<u>REFERENCE</u> _ P/CC Term Precipitation Padar Weather Descriptions	Delete
	D 1
d. When precipitation intensity information is not	Delete
<u>available.</u>	
<u>PHRASEOLOGY–</u>	Delete
AREA OF PRECIPITATION BETWEEN (number)	
<u>O'CLOCK AND (number) O'CLOCK, (number) MILES.</u>	
<u>MOVING (direction) AT (number) KNOTS, TOPS (alti-</u>	
<u>tuae). AREA IS (number) MILES IN DIAMETER,</u>	
<u>INTENSITY UNKNOWN.</u>	
<u>EXAMPLE-</u>	Delete
<u>"Area of precipitation between one o'clock and three</u>	
<u>o'clock, three five miles moving south at one five knots,</u>	
tops flight level three three zero. Area is three zero miles	
in alameter, intensity unknown.	
<u>NOTE-</u>	Delete
<u>Phraseology using precipitation intensity descriptions is</u>	
only applicable when the radar precipitation intensity	
information is determined by NWS radar equipment or	
<u>NAS grouna basea algitizea raaar equipment with</u>	
weather capabilities. This precipitation may not reach	
<u>ine surjace.</u>	
<u>e. EN ROUTE. When issuing Air Route</u>	Delete
Surveillance Radar (ARSR) precipitation intensity	
use the following:	
1. Describe the lowest displayable precipitation	Delete
intensity as MODERATE.	
2 Describe the highest displayable precipitation	Delete
intensity as HEAVY to EXTREME.	Duru

<u>PHRASEOLOGY</u>	Delete
AREA OF (Intensity) PRECIPITATION BETWEEN	
(number) O'CLOCK and (number) O'CLOCK,	
(number) MILES, MOVING (direction) AT (number)	
<u>KNOTS, TOPS (altitude). AREA IS (number) MILES IN</u>	
<u>DIAMETER.</u>	
<u>EXAMPLE-</u>	Delete
1. "Area of moderate precipitation between ten o'clock	
and one o'clock, three zero miles moving east at two zero	
<u>2</u> "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	Delete
controllers must ensure that the highest available	Delete
level of precipitation intensity within their area of	
iurisdiction is displayed	
g. When requested by the pilot, provide radar	Delete
navigational guidance and/or approve deviations	
around weather of chaff areas. In areas of	
significant weather, plan anead and be prepared to	
suggest, upon phot request, the use of alternative	
Toutes/annudes.	
<u>1.</u> An approval for lateral deviation authorizes	Delete
the pilot to maneuver left or right within the limits	
of the lateral deviation area.	
<u>REFERENCE-</u>	Delete
Arm, Paragraph 7-1-140, 1. (a) ATC injugni weather Avolaance	
Assistance	
2 When approving a weather deviation for an	Delete
2. When approving a weather deviation for an aircraft that had previously been issued a crossing	Delete
2. When approving a weather deviation for an aircraft that had previously been issued a crossing altitude including Climb Via or Descend Via	Delete
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	Delete
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	Delete
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	Delete
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.	Delete
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.	Delete
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	Delete
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	Delete
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)	Delete
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-	Delete Delete
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	Delete Delete
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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	Delete Delete
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	Delete Delete
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	Delete Delete
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	Delete Delete
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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.	Delete Delete
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- EXAMPLE EXAMPLE	Delete Delete Delete
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 alicraft 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 5-0-2, Methods	Delete Delete Delete

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.	Delete
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.	Delete
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.	Delete
EXAMPLE – <u>1. "Deviation twenty degrees right approved, when able</u> proceed direct O'Neill VORTAC and advise." En Route: The corresponding fourth line entry is "D20R/ONL" or "D20R/F."	Delete
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 pre- vents use of fourth line coordination and verbal coordin- ation 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.	Delete
<u>PHRASEOLOGY–</u> DEVIATION (restrictions if necessary) APPROVED, ADVISE CLEAR OF WEATHER.	Delete
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.	Delete
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.	Delete

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,	Delete
<u>EXAMPLE–</u> <u>"Unable deviation, turn thirty degrees right vector for</u> <u>traffic, advise clear of weather."</u>	Delete
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.	Delete
<u>EXAMPLE-</u> <u>"(call sign) assigned heading 330 for weather</u> <u>avoidance"</u> <u>"(call sign) deviating west, pilot requested"</u>	Delete
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	Delete
j. En Route Fourth Line Data Transfer	Delete
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.	Delete
<u>REFERENCE –</u> FAA Order JO 7110.65 5-4-11 <u>En Route Fourth Line Data Block</u> <u>Usage</u>	Delete
<u>EXAMPLE-</u> <u>"Deviation twenty degrees right approved, when able</u> <u>proceed direct O'Neill VORTAC and advise.</u> " In this case, the corresponding fourth line entry is "D20R/ONL" or "D20R/F."	Delete
2. The absence of a NAVAID, waypoint, or /F in the fourth line indicates that:	Delete
(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.	Delete

<u>EXAMPLE –</u> "Deviation twenty degrees right approved, advise clear	Delete
of weather."	
(b) The free text character limitation prevents the	Delete
use of fourth line coordination. Verbal coordination	
<u>is required.</u>	
EXAMPLE-	Delete
"Deviation 30 degrees left approved, when able fly	
heading zero niner zero, vector join J324 and advise."	
k. The supervisory traffic management	Delete
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-	Delete
Anomalous propagation (AP) is a natural occurrence	
affecting radar and does not in itself constitute a weather	
circuit failure.	
OLD	NEW
<u>OLD</u> 2–6–5. CALM WIND CONDITIONS	<u>NEW</u> Delete
OLD 2–6–5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the	NEW Delete Delete
OLD 2–6–5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots	<u>NEW</u> Delete Delete
OLD 2–6–5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots.	<u>NEW</u> Delete Delete
OLD 2–6–5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE= FAA0 JO 7110.65, Para 3–5–3, Tailwind Components.	NEW Delete Delete Delete
OLD 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	NEW Delete Delete Delete
OLD 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.	NEW Delete Delete Delete
OLD 2–6–5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE= FAA0 JO 7110.65, Para 3–5–3, Tailwind Components. FAA0 JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting Flight Path Separation.	NEW Delete Delete Delete
OLD 2-6-5. CALM WIND CONDITIONS <i>TERMINAL</i> . Describe the wind as calm when the wind velocity is less than three knots. <i>REFERENCE-</i> <i>FAAO JO 7110.65, Para 3–5–3, Tailwind Components.</i> <i>FAAO JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting</i> <i>Flight Path Separation.</i>	NEW Delete Delete Delete NEW
OLD 2–6–5. CALM WIND CONDITIONS <i>TERMINAL</i> . Describe the wind as calm when the wind velocity is less than three knots. <i>REFERENCE</i> – <i>FAAO JO 7110.65, Para 3–5–3, Tailwind Components.</i> <i>FAAO JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting</i> <i>Flight Path Separation.</i> OLD 2–6–6. REPORTING WEATHER	NEW Delete Delete Delete NEW Delete
OLD 2–6–5. CALM WIND CONDITIONS <i>TERMINAL</i> . Describe the wind as calm when the wind velocity is less than three knots. <i>REFERENCE–</i> <i>FAAO JO 7110.65, Para 3–5–3, Tailwind Components.</i> <i>FAAO JO 7110.65, Para 3–10–4, Intersecting Runway/Intersecting</i> <i>Flight Path Separation.</i> OLD 2–6–6, REPORTING WEATHER CONDITIONS	NEW Delete Delete Delete <u>NEW</u> Delete
OLD 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. OLD 2-6-6. REPORTING WEATHER CONDITIONS a. When the prevailing visibility at the usual point	NEW Delete Delete Delete NEW Delete
OLD 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. OLD 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	NEW Delete Delete Delete <u>NEW</u> Delete Delete
OLD 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. DLD 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	NEW Delete Delete Delete <u>NEW</u> Delete Delete
OLD 2-6-5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE- FAA0 JO 7110.65, Para 3-5-3, Tailwind Components. FAA0 JO 7110.65, Para 3-10-4, Intersecting Runway/Intersecting Flight Path Separation. OLD 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	NEW Delete Delete Delete <u>NEW</u> Delete Delete
DLD 2-6-5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE- FAA0 JO 7110.65, Para 3-5-3, Tailwind Components. FAA0 JO 7110.65, Para 3-10-4, Intersecting Runway/Intersecting Flight Path Separation. DLD 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:	NEW Delete Delete Delete NEW Delete Delete
DLD 2-6-5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE- FAA0 JO 7110.65, Para 3-5-3, Tailwind Components. FAA0 JO 7110.65, Para 3-10-4, Intersecting Runway/Intersecting Elight Path Separation. DLD 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 a follows:	NEW Delete Delete Delete NEW Delete Delete
DLD 2-6-5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. REFERENCE- FAA0.J0.7110.65. Para 3-5-3. Tailwind Components. FAA0.J0.7110.65. Para 3-10-4. Intersecting Runway/Intersecting Flight Path Separation. DLD 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 a follows: 1. Use the lower of the two observations (tower	NEW Delete Delete Delete NEW Delete Delete
OLD 2-6-5. CALM WIND CONDITIONS TERMINAL. Describe the wind as calm when the wind velocity is less than three knots. EFERENCE FAA0 JO 7110.65, Para 3-5-3, Tailwind Components. FAA0 JO 7110.65, Para 3-10-4, Intersecting Runway/Intersecting Flight Path Separation. DLD 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 a follows: b. Use the lower of the two observations (tower or surface) for aircraft operations.	NEW Delete Delete Delete NEW Delete Delete
DLD 2-6-5. CALM WIND CONDITIONS <i>TERMINAL</i> . Describe the wind as calm when the wind velocity is less than three knots. <i>REFERENCE-</i> <i>PAAO JO 7110.65, Para 3-5-3, Tailwind Components.</i> <i>FAAO JO 7110.65, Para 3-5-4, Intersecting Runway/Intersecting Flight Path Separation.</i> <i>DLD</i> 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. When the prevailing visibility at the usual point of observation, or at the tower level, is less than 4. When the prevailing visibility at the usual point of observations and apply the observations <i>sibility observations and apply the observations</i> <i>si follows:</i> 1. Use the lower of the two observations (tower <i>surface</i>) for aircraft operations. 2. Forward tower visibility observations to the	NEW Delete Delete Delete NEW Delete Delete Delete
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<u>b.</u> 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.

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.

<u>OLD</u>

2–6–7. DISSEMINATING WEATHER INFORMATION

<u>TERMINAL.</u> 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.

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<u>NOTE–</u> <u>USAF controllers do not serve as official weather</u>	Delete
<u>observers.</u>	
2. You have obtained the information from the official observer for the elements being reported.	Delete
3. The weather report was composed or verified by the weather station.	Delete
4. The information is obtained from an official Automated Weather Observation System (AWOS) or an Automated Surface Observation System (ASOS).	Delete
c. <u>Differences between weather elements</u> observed from the tower and those reported by the	Delete

weather station must be reported to the official

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observer for the element concerned.

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2-6-2. PIREP SOLICITATION AND DISSEMINATION

Emphasis must be placed on the solicitation and dissemination of PIREPs. Timely dissemination of PIREPs alerts pilots to significant weather reports. PIREPS also provide information required by ATC to provide for the safe and efficient use of airspace. This 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, braking action, volcanic eruptions and volcanic ash clouds, detection of sulfur gases in the cabin, and other conditions pertinent to flight safety. Controllers must provide the information in sufficient detail to assist pilots in making decisions pertinent to M* 1.4 - of of

	<u>ingnt safety.</u>
Add	REFERENCE– FAA Order.JO 7110.65, Para 3–1–8, Low Level Wind Shear/Microburst Advisories. FAA Order.JO 7110.65, Para 3–3–4, Braking Action. P/CG Term–Braking Action. FAA Order.IO 7210 3, Para 6–3–1, Handling of SIGMETs, CWAS
	ATA Order JO 7210.3, Fand 0=3=1, flanding of StothErs, CWAS, AIM, Para 7-5-9, Flight Operations in Volcanic Ash. FAA Order JO 7210.3, Para 10-3-1, SIGMET and PIREP Handling FAA Order JO 7110.10, Chapter 9, Section 2, Pilot Weather Report (UA/UUA)
Add	a. <u>Solicit PIREPs when requested, deemed</u> <u>necessary or any of the following conditions</u> <u>exists or is forecast for your area of jurisdiction:</u>

Add	1. <u>Ceilings at or below 5,000 feet. These</u> <u>PIREPs must include cloud base/top reports</u> <u>when feasible. When providing approach</u> <u>control services, ensure that at least one</u> <u>descent/climb-out PIREP, including cloud</u> <u>base(s), top(s), and other related phenomena, is</u> <u>obtained each hour.</u>
Add	<u>2. Visibility (surface or aloft) at or less than 5</u> miles
٨dd	3 Thunderstorms and related phenomena
Add	4 Turbulence of moderate degree or greater
Add	5 Icing of light degree or greater
Add	6. Wind shear.
Add	7. Braking action reports.
Add	8. Volcanic ash clouds.
Add	9. <u>Detection of sulfur gases (SO2 or H2S)</u> , associated with volcanic activity, in the cabin.
Add	<u>NOTE-</u> <u>1. The smell of sulfur gases in the cockpit may indicate</u> <u>volcanic activity that has not yet been detected or report-</u> <u>ed and/or possible entry into an ash-bearing cloud.</u> <u>SO2 is identifiable as the sharp, acrid odor of a freshly</u> <u>struck match. H2S has the odor of rotten eggs.</u> <u>2. Pilots may forward PIREPs regarding volcanic activ-</u> <u>ity using the format described in the Volcanic Activity</u> <u>Reporting Form (VAR) as depicted in the AIM, Appen-</u> <u>dix 2.</u>
Add	b. Record with the PIREPs:
Add	<u>1. Time.</u>
Add	2. Aircraft position.
Add	<u>3. Type aircraft.</u>
Add	<u>4. Altitude.</u>
Add	<u>5.</u> When the PIREP involves icing include:
Add	<u>(a) Icing type and intensity.</u>
Add	<u>(b)</u> <u>Air temperature in which icing is</u> <u>occurring.</u>
Add	<u>c. Obtain PIREPs directly from the pilot, or if</u> <u>the PIREP has been requested by another</u> <u>facility, you may instruct the pilot to deliver it</u> <u>directly to that facility.</u>

Add	<u>PHRASEOLOGY–</u> <u>REQUEST/SAY FLIGHT CONDITIONS. Or if ap-</u> <u>propriate,</u> <u>REQUEST/SAY (specific conditions; i.e., ride, cloud,</u> <u>visibility, etc.) CONDITIONS.</u> <u>If necessary,</u> <u>OVER (fix),</u>
	<u>or</u>
	<u>ALONG PRESENT ROUTE,</u>
	<u>or</u>
	BETWEEN (fix) AND (fix).
Add	d. Disseminate PIREPs as follows:
Add	<u>1. Relay pertinent PIREP information to</u> concerned aircraft in a timely manner.
Add	<u>NOTE–</u> Use the word gain and/or loss when describing to pilots the effects of wind shear on airspeed.
Add	<u>EXAMPLE-</u> <u>"Delta Seven Twenty-one, a Boeing Seven Thirty-sev- en, previously reported wind shear, loss of two five knots at four hundred feet." <u>"Alaska One, a Boeing Seven Thirty-seven, previously</u> <u>reported wind shear, gain of two-five knots between</u> <u>niner hundred and six hundred feet, followed by a loss</u> <u>of five zero knots between five hundred feet and the sur- face."</u></u>
Add	<u>REFERENCE–</u> AIM, Para 7–1–24, Wind Shear <u>PIREPs.</u>
Add	2. <u>EN ROUTE. Relay all operationally</u> significant PIREPs to the facility weather coordinator.
Add	<u>3.</u> <u>TERMINAL</u> . Relay all operationally significant PIREPs to:
Add	(a) The appropriate intra-facility positions.
Add	(b) <u>The FLM/CIC for long line</u> dissemination via an FAA approved electronic system (for example, AIS–R, or similar systems).
Add	<u>(c)</u> <u>Outside Alaska: The overlying</u> <u>ARTCC's Flight Data Unit for long-line</u> <u>dissemination; or,</u>
Add	(d) Alaska Only: The FSS serving the area in which the report was obtained.
Add	<u>NOTE–</u> The FSS in Alaska is responsible for long line dissemi- nation.

Add	<u>REFERENCE–</u> FAA Order JO 7110.65, Para 2–1–2, Duty Priority.
Add	(e) Other concerned terminal or en route ATC facilities, including non-FAA facilities.
<u>OLD</u>	NEW
Add	<u>2–6–3. REPORTING WEATHER</u> CONDITIONS
Add	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:
Add	<u>1. Use the lower of the two observations</u> (tower or surface) for aircraft operations.
Add	2. Forward tower visibility observations to the weather observer.
Add	3. <u>Notify the weather observer when the</u> tower observes the prevailing visibility decrease to less than 4 miles or increase to 4 miles or more.
Add	<u>b.</u> <u>Describe the wind as calm when the wind</u> <u>velocity is less than three knots.</u>
Add	REFERENCE_ FAA Order.JO 7110.65, Para 3-5-3, Tailwind Components. FAA Order.JO 7110.65, Para 3-10-4, Intersecting Runway/Intersecting Flight Path Separation.
Add	<u>c.</u> <u>Forward current weather changes to the</u> <u>appropriate control facility as follows:</u>
Add	<u>1. When the official weather changes to a condition:</u>
Add	<u>(a)</u> <u>Less than a 1,000–foot ceiling or below</u> <u>the highest circling minimum, whichever is</u> <u>greater.</u>
Add	(b) Where the visibility is less than 3 miles.
Add	(c) Where conditions improve to values greater than those listed in (a) and (b).
Add	2. When 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.
Add	<u>d. Towers at airports where military turbo-jet</u> <u>en route descents are routinely conducted must</u> <u>also report the conditions to the ARTCC even if</u> <u>it is not the controlling facility.</u>
Add	<u>e. If the receiving facility informs you that</u> weather reports are not required for a specific time period, discontinue the reports.

Add	<u>f. EN ROUTE. When you determine that</u> weather reports for an airport will not be required for a specific time period, inform the FSS or tower of this determination.
Add	<u>REFERENCE–</u> FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities.
<u>OLD</u>	NEW
Add	<u>2–6–4. ISSUING WEATHER AND CHAFF</u> <u>AREAS</u>
Add	<u>a.</u> <u>Controllers</u> must issue pertinent <u>information on observed/reported weather and</u> <u>chaff areas to potentially affected aircraft.</u> <u>Define the area of coverage in terms of:</u>
Add	<u>1. Azimuth (by referring to the 12-hour clock) and distance from the aircraft and/or</u>
Add	2. The general width of the area and the area of coverage in terms of fixes or distance and direction from fixes.
Add	<u>NOTE-</u> <u>Weather significant to the safety of aircraft includes</u> <u>conditions such as funnel cloud activity, lines of thun-</u> <u>derstorms, embedded thunderstorms, large hail, wind</u> <u>shear, microbursts, moderate to extreme turbulence</u> <u>(including CAT), and light to severe icing.</u>
	<u>REFERENCE–</u> AIM, Paragraph 7–1–14, ATC Inflight Weather Avoidance <u>Assistance.</u>
Add	<u>PHRASEOLOGY-</u> <u>WEATHER/CHAFF AREA BETWEEN (num-</u> ber)O'CLOCK AND (number) O'CLOCK (number) MILES, and/or (number) MILE BAND OF WEATH- <u>ER/CHAFF FROM (fix or number of miles and direc-</u> tion from fix) TO (fix or number of miles and direction from fix).
Add	b. Inform any tower for which you provide approach control services of observed precipitation on radar which is likely to affect their operations.
Add	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.
Add	<u>1. LIGHT.</u>
Add	<u>2. MODERATE.</u>
Add	<u>3. HEAVY.</u>
Add	<u>4. EXTREME.</u>

Add	<u>NOTE–</u> Weather and Radar Processor (WARP) does not display light intensity.
Add	<u>PHRASEOLOGY–</u> <u>AREA OF (Intensity) PRECIPITATION BETWEEN</u> (number) O'CLOCK AND (number) O'CLOCK, (num- ber) MILES, MOVING (direction) AT (number) <u>KNOTS, TOPS (altitude). AREA IS (number) MILES</u> <u>IN DIAMETER.</u>
Add	EXAMPLE- 1. "Area of heavy precipitation between ten o'clock and two o'clock, one five miles. Area is two five miles in di- ameter." 2. "Area of heavy to extreme precipitation between ten o'clock and two o'clock, one five miles. Area is two five miles in diameter."
Add	<u>REFERENCE–</u> <u>P/CG Term– Precipitation Radar Weather Descriptions.</u>
Add	<u>d. When precipitation intensity information is</u> not available.
Add	<u>PHRASEOLOGY–</u> <u>AREA OF PRECIPITATION BETWEEN (number)</u> O'CLOCK AND (number) O'CLOCK, (number) <u>MILES. MOVING (direction) AT (number) KNOTS,</u> <u>TOPS (altitude). AREA IS (number) MILES IN DIAM- ETER, INTENSITY UNKNOWN.</u>
Add	<u>EXAMPLE–</u> <u>"Area of precipitation between one o'clock and three</u> <u>o'clock, three five miles moving south at one five knots,</u> <u>tops flight level three three zero. Area is three zero miles</u> <u>in diameter, intensity unknown."</u>
Add	<u>NOTE-</u> <u>Phraseology using precipitation intensity descriptions</u> <u>is only applicable when the radar precipitation intensity</u> <u>information is determined by NWS radar equipment or</u> <u>NAS ground based digitized radar equipment with</u> <u>weather capabilities. This precipitation may not reach</u> <u>the surface.</u>
Add	<u>e.</u> <u>EN ROUTE</u> . When issuing Air Route Surveillance Radar (ARSR) precipitation intensity use the following:
Add	<u>1. Describe the lowest displayable</u> precipitation intensity as MODERATE.
Add	2. Describe the highest displayable precipitation intensity as HEAVY to EXTREME.
Add	<u>PHRASEOLOGY–</u> <u>AREA OF (Intensity) PRECIPITATION BETWEEN</u> (number) O'CLOCK and (number) O'CLOCK, (num- ber) MILES, MOVING (direction) AT (number) KNOTS, TOPS (altitude). If applicable, AREA IS (number) MILES IN DIAMETER.

Add	<u>EXAMPLE–</u> <u>1. "Area of moderate precipitation between ten</u> <u>o'clock and one o'clock, three zero miles moving east</u> <u>at two zero knots, tops flight level three seven zero.</u> <u>2. "Area of moderate precipitation between ten</u> <u>o'clock and three o'clock, two zero miles. Area is two</u> <u>five miles in diameter."</u>
Add	<u>f. Controllers must ensure that the highest</u> available level of precipitation intensity within their area of jurisdiction is displayed unless operational/equipment limitations exist.
Add	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.
Add	<u>1.</u> <u>An approval for lateral deviation</u> <u>authorizes the pilot to maneuver left or right</u> within the limits of the lateral deviation area.
Add	<u>REFERENCE–</u> AIM, Paragraph 7–1–14b, 1. (a) ATC Inflight Weather Avoidance <u>Assistance</u>
Add	2. If a pilot enters your area of jurisdiction already deviating for weather, advise the pilot of any additional weather which may affect the route.
Add	3. If traffic and airspace (i.e., special use airspace boundaries, LOA constraints) permit, combine the approval for weather deviation with a clearance on course.
Add	<u>PHRASEOLOGY–</u> <u>DEVIATION (restrictions if necessary) APPROVED,</u> <u>WHEN ABLE, PROCEED DIRECT (name of</u> <u>NAVAID/WAYPOINT/FIX)</u>
	<u>or</u>
	<u>DEVIATION (restrictions if necessary) APPROVED,</u> <u>WHEN ABLE, FLY HEADING (degrees), VECTOR</u> <u>TO JOIN (airway) AND ADVISE.</u>
Add	<u>EXAMPLE-</u> <u>1. "Deviation 20 degrees right approved, when able pro- ceed direct O'Neill VORTAC and advise." En Route:</u> <u>The corresponding fourth line entry is "D20R/ONL" or</u> <u>"D20R/F."</u> <u>2. "Deviation 30 degrees left approved, when able fly</u> <u>heading zero niner zero, vector to join J324 and ad-</u> vise." En Route: In this case the free text character limi- tation prevents use of fourth line coordination and ver- bal coordination is required.

Add	<u>4. If traffic or airspace prevents you from</u> clearing the aircraft on course at the time of the approval for a weather deviation, instruct the pilot to advise when clear of weather.
Add	<u>PHRASEOLOGY–</u> <u>DEVIATION (restrictions if necessary) APPROVED,</u> <u>ADVISE CLEAR OF WEATHER.</u>
Add	EXAMPLE- "Deviation North of course approved, advise clear of weather." En Route: In this case the corresponding fourth line en- try is "DN," and the receiving controller must provide a clearance to rejoin the route in accordance with para- graph 2-1-15 c.
Add	<u>h.</u> <u>When a deviation cannot be approved as</u> <u>requested because of traffic, take an alternate</u> <u>course of action that provides positive control</u> <u>for traffic resolution and satisfies the pilot's need</u> <u>to avoid weather.</u>
Add	<u>PHRASEOLOGY-</u> <u>UNABLE REQUESTED DEVIATION, FLY HEAD-</u> ING (heading), ADVISE CLEAR OF WEATHER
	<u>or</u>
	<u>UNABLE REQUESTED DEVIATION, TURN (num- ber of degrees) DEGREES (left or right) VECTOR</u> FOR TRAFFIC, ADVISE CLEAR OF WEATHER,
Add	<u>EXAMPLE–</u> <u>"Unable requested deviation, turn thirty degrees right</u> <u>vector for traffic, advise clear of weather."</u>
Add	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 predetermined procedures. Emphasis should be made between: controller assigned headings, suggested headings, or pilot initiated deviations.
Add	<u>EXAMPLE –</u> <u>"(call sign) assigned heading three three zero for</u> <u>weather avoidance</u> " <u>"(call sign) deviating west, pilot requested</u> "
Add	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
Add	j. En Route Fourth Line Data Transfer

Add	<u>1. The inclusion of a NAVAID, waypoint, or /F</u> 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
Add	<u>in the route of flight.</u> <u>REFERENCE-</u> <u>FAA Order JO 7110.65, 5-4-11, En Route Fourth Line Data Block</u> Usage
Add	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."
Add	<u>2. The absence of a NAVAID, waypoint, or /F</u> <u>in the fourth line indicates that:</u>
Add	(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.
Add	<u>EXAMPLE –</u> <u>"Deviation twenty degrees right approved, advise clear</u> of weather."
Add	(b) <u>The free text character limitation</u> prevents the use of fourth line coordination. Verbal coordination is required.
Add	<u>EXAMPLE-</u> <u>"Deviation 30 degrees left approved, when able fly</u> <u>heading zero niner zero, vector to join J324 and ad-</u> vise."
Add	k. The supervisory traffic management coordinator-in-charge/operations supervisor/controller-in-charge must 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 must be reported to the technical operations technician and the air traffic supervisor must determine if the digitized radar derived weather data is to be displayed and a NOTAM distributed.
Add	<u>Anomalous propagation (AP) is a natural occurrence</u> <u>affecting radar and does not in itself constitute a weath-</u> <u>er circuit failure.</u>
<u>OLD</u>	NEW
Add	<u>2–6–5. DISSEMINATING OFFICIAL WEATHER INFORMATION</u>
Add	<u>TERMINAL.</u> Observed elements of weather information must be disseminated as follows:

Add	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.
Add	<u>b. Specific values, such as ceiling and visibility,</u> <u>may be transmitted if obtained by one of the</u> <u>following means:</u>
Add	<u>1. You are properly certificated and acting as</u> official weather observer for the elements being reported.
Add	<u>NOTE–</u> <u>USAF controllers do not serve as official weather ob-</u> <u>servers.</u>
Add	<u>2. You have obtained the information from</u> <u>the official observer for the elements being</u> <u>reported.</u>
Add	<u>3. The weather report was composed or verified by the weather station.</u>
Add	<u>4. The information is obtained from a FAA approved automation surface weather system.</u>
Add	<u>c. Differences between weather elements</u> <u>observed from the tower and those reported by</u> <u>the weather station must be reported to the</u> <u>official observer for the element concerned.</u>
OLD	NEW
Add	<u>2–6–6. HAZARDOUS INFLIGHT WEATHER</u> <u>ADVISORY SERVICE (HIWAS)</u>
Add	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 Meteoro- logical Information (AIRMET), Significant Meteorological Information (SIGMET), Con- vective SIGMET (WST), Urgent Pilot Weather Reports (UUA), and Center Weather Advisories (CWA). Facilities must review alert messages to determine the geographical area and opera- tional impact for hazardous weather informa- tion broadcasts. The broadcast is not required if aircraft on your frequency(s) will not be affected.

Add	a. <u>Controllers within commissioned HIWAS</u> areas must broadcast a HIWAS alert on all frequencies, except emergency frequency, upon receipt of hazardous weather information. <u>Controllers are required to disseminate data</u> based on the operational impact on the sector or area of control jurisdiction.
Add	<u>NOTE–</u> <u>The inclusion of the type and number of weather ad-</u> visory responsible for the HIWAS advisory is option- al.
Add	<u>PHRASEOLOGY–</u> <u>ATTENTION ALL AIRCRAFT. HAZARDOUS</u> <u>WEATHER INFORMATION (SIGMET, Convective</u> <u>SIGMET, AIRMET, Urgent Pilot Weather Report</u> (UUA), or Center Weather Advisory (CWA), Number or <u>Numbers) FOR (specific weather phenomenon)</u> <u>WITHIN (geographical area) AVAILABLE ON HI-</u> <u>WAS, OR FLIGHT SERVICE FREQUENCIES.</u>
Add	<u>b.</u> <u>Controllers outside of commissioned</u> <u>HIWAS areas must:</u>
Add	<u>1. Advise pilots of the availability of</u> hazardous weather advisories. Pilots requesting additional information should be directed to contact the nearest Flight Service.
Add	2. <u>Apply the same procedure when HIWAS</u> outlets, or outlets with radio coverage extending into your sector or airspace under your jurisdiction, are out of service.
Add	<u>PHRASEOLOGY–</u> <u>ATTENTION ALL AIRCRAFT. HAZARDOUS</u> <u>WEATHER INFORMATION FOR (specific weather</u> <u>phenomenon) WITHIN (geographical area) AVAIL-</u> <u>ABLE FROM FLIGHT SERVICE.</u>
Add	<u>c. Terminal facilities have the option to limit</u> <u>hazardous weather information broadcasts as</u> <u>follows: Tower cab and approach control</u> <u>facilities may opt to broadcast hazardous</u> <u>weather information alerts only when any part</u> <u>of the area described is within 50 NM of the</u> airspace under their jurisdiction.
Add	<u>REFERENCE–</u> <u>AIM, Chapter 7, Section 1, Meteorology, Para 7–1–5 through Para</u> 7–1–9 <u>-</u>
Add	d. <u>EN ROUTE. ERAM. Controllers must</u> electronically acknowledge hazardous weather information messages after appropriate action has been taken.
Add	<u>NOTE–</u> <u>EN ROUTE. While hazardous weather information is</u> commonly distributed via the SIGMET View, it is possi- ble to receive the information via the GI View.

1. PARAGRAPH NUMBER AND TITLE: 2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOW-EST USABLE FL

2. BACKGROUND: When issuing an altitude assignment that will descend an aircraft out of Class A airspace, current guidance requires controllers to issue the altimeter setting along with the descent clearance. Some Optimal Profile Descents (OPD) begin in sectors that have a base altitude in Class A airspace. Prior to the incorporation of OPDs, these sectors did not issue altimeters on a recurring basis.

3. CHANGE:

<u>OLD</u> 2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL

Title through d NOTE

e. When issuing clearance to descend below the lowest usable flight level, advise the pilot of the altimeter setting of the weather reporting station nearest the point the aircraft will descend below that flight level.

<u>NEW</u> 2–7–2. ALTIMETER SETTING ISSUANCE BELOW LOWEST USABLE FL

No Change

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

1. PARAGRAPH NUMBER AND TITLE: 3–7–6. PRECISION OBSTACLE FREE ZONE (POFZ) AND FINAL APPROACH OBSTACLE CLEARANCE SURFACES (OCS)

2. BACKGROUND: It has come to our attention from Flight Standards that a reference to FAA Order 8260.3 (TERPS) within a Note in paragraph 3–7–6 is no longer correct. This reference concerns dimensions of the POFZ and are no longer contained in the TERPS orders, and have been moved to an advisory circular. Additionally, the dimensions of the POFZ are contained in Figure 3–7–1.

3. CHANGE:

<u>OLD</u>

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

Title through b

NOTE-

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

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 are, are exempt.

<u>NEW</u>

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

No Change

NOTE-

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

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

c through EXAMPLE

REFERENCE-FAAOJO 7110.65, Para 3–1–6, Traffic Information. No Change

REFERENCE– FAA Order JO 7110.65, Para 3–1–6, Traffic Information. <u>AC150/5300–13, Airport Design</u>

1. PARAGRAPH NUMBER AND TITLE: 3-9-4 LINE UP AND WAIT (LUAW)

2. BACKGROUND: Because of changes to FAA Order JO 7110.65 Para 3–9–4d. Line Up And Wait (LUAW), some adjustments to the USAF/USN specific procedures are being made to align with the existing NAS wide requirements. The current language in para 3–9–4e combines arrival and departure information into the same paragraph. By deleting 3–9–4e USAF/USN will follow the new language in paragraph 3–9–4d. This expands the existing USAF/USN LUAW requirement outside of 6–mile final approach to include the closest traffic within 6 flying miles to the same runway. The USAF/USN requirement to advise the landing aircraft, on a different frequency, of traffic holding in position is consistent with paragraph 3–10–5c Landing Clearance. In that paragraph there is no distinction made for radio frequency, ATC must advise the appropriate landing aircraft of traffic holding in position on the same runway.

3. CHANGE:

OLDNEW3-9-4 LINE UP AND WAIT (LUAW)
a through d3-9-4 LINE UP AND WAIT (LUAW)a through dNo Changee. 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.Deletef through gRe-letter e through p

1. PARAGRAPH NUMBER AND TITLE:

3-9-6. SAME RUNWAY SEPARATION
3-9-7. WAKE TURBULENCE SEPARATION FOR INTERSECTION DEPARTURES
3-9-8. INTERSECTING RUNWAY/INTERSECTING FLIGHT PATH OPERATIONS
3-9-9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS
3-9-10. TAKEOFF CLEARANCE
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. AJV–8 recently became aware that the analysis of the wake vortex dispersion which allowed for the reduction in separation for small aircraft departing a parallel runway separated by less than 700 feet be treated as the same runway when a small aircraft departs behind a B757. While developing this change, it created an opportunity to relocate the requirement to provide wake turbulence separation for aircraft departing a parallel runway separated by 165 change, it created an opportunity to relocate the requirement to provide wake turbulence separation for aircraft departing a parallel runway separated by 165 change, it created an opportunity to relocate the requirement to provide wake turbulence separation for aircraft departing a parallel runway separated by 2,500 feet or more from paragraph 3–9–8 to paragraph 3–9–6, which also restored the option to apply radar separation for this operation.

<u>OLD</u>

3–9–6. SAME RUNWAY SEPARATION

Title through d REFERENCE

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.

Add

NOTE-

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

Add

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

<u>NOTE-</u>

<u>Takeoff clearance to the following aircraft should not be</u> <u>issued until the time interval has passed after the preced-</u> <u>ing aircraft begins takeoff roll.</u>

f1 and **f2**

<u>NEW</u>

3-9-6. SAME RUNWAY SEPARATION

No Change

e. The minima in Para 5-5-4, Minima, subparagraph g, may be applied in lieu of the time interval requirements in subparagraphs f, g, <u>and h</u>. 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.

REFERENCE-

FAA Order JO 7210.3, Para 2–1–15, Authorization for Separation Services by Towers. FAA Order JO 7210.3, Para 10–5–3, Functional Use of Certified Tower radar Displays.

NOTE-

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

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

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

Delete

No Change

Add <u>FIG 3-9-4</u> Same Runway Separation

Departure Behind Departure Needs Wake Turbulence Separation	
	·

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

No Change

1. The same runway.

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

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





Add <u>FIG 3-9-5</u> Same Runway Separation





Add

Add

2. A parallel runway separated by 700 feet or more if projected flight paths will cross. (See Fig <u>3-9-7.)</u>

Add





Add	<u>h. Separate aircraft departing from a parallel</u> <u>runway separated by 2,500 feet or more if</u> <u>projected flight paths will cross (See FIG 3–9–8):</u>
Add	<u>1. Heavy, large, or small behind super – 3</u> <u>minutes.</u>
Add	<u>2. Heavy, large, or small behind heavy – 2</u> minutes.
Add	

Add <u>FIG 3-9-8</u> Parallel Runways Separated by 2,500 feet or More Departure Behind Departure Needs Wake Turbulence Separation



<u>i</u> and <u>j</u>

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

Add

Add

<u>**k.**</u> Do not approve pilot requests to deviate from the required intervals contained in subparagraphs f through j.

PHRASEOLOGY-HOLD FOR WAKE TURBULENCE

REFERENCE-

NOTE-

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

A request for takeoff does not initiate a waiver request.

l

<u>m</u>

<u>OLD</u>

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

Title through a2

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:

Re–letter $\underline{\mathbf{k}}$ and $\underline{\mathbf{l}}$

<u>k.</u> Separate a small aircraft behind a B757 that has departed or made a low/missed approach <u>by 3</u> <u>minutes</u> when utilizing opposite direction takeoffs or landings <u>from:</u>

<u>1. The same runway or a parallel runway</u> separated by less than 700 feet.

2. <u>A parallel runway separated by 700 feet or</u> more if projected flight paths will cross.

<u>**l**</u>. Do not approve pilot requests to deviate from the required intervals contained in subparagraphs f through $\underline{\mathbf{k}}$.

No Change

No Change

Re-letter <u>m</u> No Change

Re-letter n

NEW

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

No Change No Change (a) The same runway.

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

<u>OLD</u>

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

Title through b *REFERENCE*

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–<u>5</u>

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 $3-9-\underline{6}$)

REFERENCE-

P/CG Term – Clear of the Runway.

FIG 3-9-<u>6</u>

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 flight paths 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.

b3(a) through **b3**(c)

FIG 3–9–<u>7</u> FIG 3–9–8

(a) The same runway <u>or a parallel runway</u> separated by lees than 700 feet.

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

<u>NEW</u>

3-9-8. INTERSECTING RUNWAY/ INTERSECTING FLIGHT PATH OPERATIONS

No Change

1. The preceding aircraft has departed and passed the intersection or is turning to avert any conflict. (See FIG $3-9-\underline{9}$.)

Renumber FIG 3-9-9

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 3-9-10)

No Change

Re-number *FIG 3-9-<u>10</u>*

No Change

3. Separate IFR/VFR aircraft taking off behind a departing or landing aircraft on an intersecting runway if flight paths will cross (See FIG $3-9-\underline{11}$ and FIG $3-9-\underline{12}$):

No Change

No Change Re–number *FIG 3–9–<u>11</u>* Re–number *FIG 3–9–<u>12</u>*



<u>OLD</u>

3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

Title through a *REFERENCE*

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-<u>10</u>

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–<u>11</u> FIG 3–9–<u>12</u>

b. If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance on 1NM or less from either departure end, apply the provisions of Paragraph 3–9–8, Intersecting Runway <u>Separation</u>, 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–<u>15</u> and FIG 3–9–<u>16</u>.)

REFERENCE-

FAAOJO 7210.3, Para 10–3–14, Go–Around/Missed Approach

WAKE TURBULENCE APPLICATION

<i>FIG 3–9–<u>13</u></i>
<i>FIG 3–9–<u>14</u></i>

<u>NEW</u>

3–9–9. NONINTERSECTING CONVERGING RUNWAY OPERATIONS

No Change

1. The preceding aircraft has departed and crossed the departure runway, or is turning to avert any conflict. (See FIG 3-9-13)

Re-number *FIG 3-9-<u>13</u>*

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 3-9-14 and FIG 3-9-15)

Re-number *FIG 3-9-<u>14</u>*

Re-number *FIG 3-9-<u>15</u>*

b. If the extended centerline of a runway crosses a converging runway or the extended centerline of a converging runway at a distance on 1NM or less from either departure end, apply the provisions of Paragraph 3-9-8, Intersecting Runway/ Intersecting Flight Path Operations, unless the facility is using aids specified in a facility directive, (may include but are not limited to, Arrival/Departure Window (ADW), ASDE-X Virtual Runway Intersection Point (VRIP), cut-off points or automation). (See FIG 3-9-16 and FIG 3-9-17.)

REFERENCE-

FAA <u>Order</u> JO 7210.3, Para 10-3-14, Go-Around/Missed Approach

Delete Re–number *FIG* $3-9-\underline{16}$ Re–number *FIG* $3-9-\underline{17}$

Add

c. Separate <u>IFR/VFR</u> aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG 3–9–<u>15</u>.):

c1 through c3

FIG 3–9–<u>15</u>

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 <u>IFR/VFR</u> 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.):

d1 through **d3** FIG 3–9–<u>16</u>

<u>OLD</u>

3-9-10. TAKEOFF CLEARANCE

Title through **d** FIG 3–9–<u>17</u> **e** through *EXAMPLE*

FIG 3–9–<u>18</u>

<u>OLD</u>

5–5–4. MINIMA

Title through g3

NOTE-

The application of paragraph 5-8-3, Successive or Simultaneous Departures, satisfies this requirement.

Add

WAKE TURBULENCE APPLICATION

c. Separate aircraft taking off behind a departing aircraft on a crossing runway if projected flight paths will cross (See FIG $3-9-\underline{18}$.):

No Change Re–number *FIG 3–9–<u>18</u>* No Change

d. Separate aircraft departing behind a landing aircraft on a crossing runway if the departure will fly through the airborne path of the arrival (See FIG $3-9-\underline{19}$.):

No Change

Re-number FIG 3-9-19

<u>NEW</u>

3-9-10. TAKEOFF CLEARANCE

No Change Re-number FIG 3-9-<u>20</u> No Change Re-number FIG 3-9-<u>21</u>

<u>NEW</u>

No Change

NOTE-

5-5-4. MINIMA

<u>1.</u> The application of paragraph 5–8–3, Successive or Simultaneous Departures, satisfies this requirement.

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

1. PARAGRAPH NUMBER AND TITLE:

4–3–2. DEPARTURE CLEARANCES 4–3–3. ABBREVIATED DEPARTURE CLEARANCES 4–5–7. ALTITUDE INFORMATION 5–6–2. METHODS

2. BACKGROUND: Climb Via procedures were introduced in April 2014. Since introduction of these procedures, confusion and frustration within industry has been communicated. The premise of one size fits all in the use of climb via clearances when departure procedures do not contain published crossing restrictions has not been successful. As a result, action is being taken to restore direction for use of "Maintain" when formulating departure clearances containing SID procedures that do not contain published crossing restrictions, radar vector SIDs and those SIDs with a Radar Vector Segment.

3. CHANGE:

<u>OLD</u>

4–3–2. DEPARTURE CLEARANCES

Title through d

e. Altitude. Use one of the following in the order of preference listed. <u>Altitude may be omitted if the</u> top altitude is published in the SID route <u>description.</u>

e1 through e3(b)

Add

NOTE, PHRASEOLOGY, EXAMPLE AND REFERENCE

<u>4.</u> Use one of the following when the SID contains published crossing restrictions:

(a) <u>When the top altitude is included in the SID</u> <u>route description, instruct aircraft to "climb via</u> 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.

<u>NEW</u>

4–3–2. DEPARTURE CLEARANCES

No Change

e. Altitude. Use one of the following in the order of preference listed.

No Change

4. When a SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or a Radar Vector SID; or a SID is constructed with a Radar Vector segment and contains published crossing restrictions after the vector segment, instruct aircraft to "MAINTAIN (altitude)."

No Change

<u>5.</u> Use one of the following when the SID contains published crossing restrictions:

(a) <u>Instruct aircraft to "Climb via SID."</u>

(b) <u>Instruct the aircraft to "Climb via SID</u> <u>except maintain (altitude)" when a top altitude</u> <u>is not published or when it is necessary to issue</u> <u>an interim altitude.</u>

No Change

NOTE-

<u>1. Use of "Climb via SID Except Maintain" to emphasize a published procedural constraint is an inappropriate use of this phraseology.</u>

<u>2.</u> 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.

OLD

4–3–3. ABBREVIATED DEPARTURE CLEARANCES

Title through a3 NOTE

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 through **c**

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.

15 dtill20dt	
Add	e. Use one of the following when the SID contains published crossing restrictions:
Add	<u>1. Instruct aircraft to "Climb via SID."</u>
Add	2. Instruct aircraft to "Climb via SID except maintain (altitude)" when a top altitude is not published or when it is necessary to issue an interim altitude.
Add	<u>NOTE–</u> <u>Use of "Climb via SID Except Maintain" to emphasize</u> <u>a published procedural constraint is an inappropriate</u> <u>use of this phraseology.</u>
Add	<u>f. Instruct aircraft to MAINTAIN (altitude)</u> <u>when:</u>
Add	<u>1. No SID is assigned.</u>
Add	2. A SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or is a Radar Vector SID.

NEW

4-3-3. ABBREVIATED DEPARTURE **CLEARANCES**

No Change

4. The assigned altitude, according to the provisions in para 4-3-2, Departure Clearances, subparagraph e, is stated in the clearance.

No Change

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." If required, add any additional instructions or information, including requested altitude if different than assigned.

Delete

Delete
Add

PHRASEOLOGY– CLEARED TO (destination) AIRPORT;

and as appropriate,

(SID name and number) DEPARTURE, THEN AS FILED.

MAINTAIN (altitude); (additional instructions or information).

Or <u>as appropriate</u>,

CLIMB VIA SID.

CLIMB VIA SID <u>except maintain</u> (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, NOTE AND REFERENCE

<u>e</u>. When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must <u>either</u>:

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.

<u>3. A SID is constructed with a Radar Vector</u> segment and contains published crossing restrictions after the vector segment.

PHRASEOLOGY-CLEARED TO (destination) AIRPORT;

and as appropriate,

(SID name and number) DEPARTURE, THEN AS FILED.

When the SID does not contain published crossing restrictions and/or is a SID with a Radar Vector segment or a Radar Vector SID; or is a SID with a radar vector segment and contains published crossing restrictions after the vector segment.

MAINTAIN (altitude); (additional instructions or information).

Or when a SID contains published crossing restrictions,

CLIMB VIA SID.

CLIMB VIA SID <u>EXCEPT MAINTAIN</u> (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).

No Change

g. When a filed route will require revisions, the controller responsible for initiating the clearance to the aircraft must:

1. Issue a FRC/FRC until a fix.

2. <u>Specify the assigned altitude to maintain,</u> <u>or Climb Via SID, or Climb Via SID except</u> <u>maintain (altitude), as appropriate.</u>

Delete

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.

Delete

Delete

PHRASEOLOGY-CLEARED TO (destination) AIRPORT.

<u> Or</u>

CLEARED TO (NAVAID name and type).

<u>Or</u>

<u>CLEARED TO (intersection or waypoint name and type).</u>

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 <u>as appropriate</u>,

CLIMB VIA SID

CLIMB VIA SID <u>except maintain</u> (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

<u>f</u> and **g**

<u>OLD</u>

4-5-7. ALTITUDE INFORMATION

Title through g

h. Instructions to vertically navigate on a STAR/SID with published restrictions.

PHRASEOLOGY – CLEARED TO (destination) AIRPORT.

Or when the SID does not contain published crossing restrictions and/ or is a SID with a Radar Vector segment or a Radar Vector SID

(SID name and number) DEPARTURE, (transition name) TRANSITION; THEN, AS FILED, EXCEPT CHANGE ROUTE TO READ (amended route portion). MAINTAIN (altitude);

Or <u>when the SID contains published crossing</u> <u>restrictions</u>,

CLIMB VIA SID

CLIMB VIA SID <u>EXCEPT MAINTAIN</u> (altitude). 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).

No Change Re–letter <u>**h**</u> and <u>**i**</u>

<u>NEW</u>

4-5-7. ALTITUDE INFORMATION

No Change

h. Instructions to vertically navigate on a STAR/SID with published **crossing** restrictions.

PHRASELOLGY through **h5**

6. When an aircraft has been issued an interim altitude and after departure ATC can subsequently clear the aircraft to climb to the original top altitude published in <u>the</u> SID instruct aircraft to "climb via SID." When issuing a <u>new</u> altitude and compliance with published restrictions is still required instruct aircraft to "climb via SID except maintain (altitude)."

<u>OLD</u>

5-6-2. METHODS

Title through e

f. Aircraft instructed to resume a procedure which contains restrictions (SID/STAR<u>, etc.</u>) must be issued/reissued all applicable restrictions or <u>must</u> be advised to comply with those restrictions.

PHRASEOLOGY-

<u>RESUME (name/SID/transition/STAR), COMPLY</u> <u>WITH RESTRICTIONS.</u>

PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BE-LOW (altitude) CLIMB VIA/DESCEND VIA (SID/STAR)

EXAMPLE-

<u>"Resume the Mudde One Arrival, comply with restrictions."</u>

"Cleared direct Luxor, <u>resume</u> the Ksino One arrival, comply with restrictions."

"Cleared direct HITME, cross HITME at or above one one thousand, climb via the Boach Five departure."

No Change

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

<u>NEW</u>

5-6-2. METHODS

No Change

f. Aircraft instructed to resume a procedure which contains **published crossing** restrictions (SID/STAR) must be issued/reissued all applicable restrictions or **be instructed to Climb Via/Descend Via.**

PHRASEOLOGY-

PROCEED DIRECT (NAVAID, fix, waypoint) CROSS (NAVAID, fix, waypoint) AT/AT OR ABOVE/AT OR BE-LOW (altitude), then CLIMB VIA/DESCEND VIA (SID/ STAR)

EXAMPLE-

"Cleared direct Luxor, <u>then descend via</u> the Ksino One arrival."

"Cleared direct HITME, cross HITME at or above one one thousand, <u>then</u> climb via the Boach Five departure."

1. PARAGRAPH NUMBER AND TITLE: 4–6–1. CLEARANCE TO HOLDING FIX

2. BACKGROUND: Advances in aviation technology and navigation systems have led to multiple holding patterns at certain fixes and the possibility that holding patterns published on RNAV procedures do not mirror those on conventional STARs. "As published" holding clearances were always intended to be on the route or procedure being flown by an aircraft. In order to clarify existing language, the requirement was added that an aircraft may only be issued an "as published" holding clearance when the holding pattern is published on that aircraft's assigned procedure or route of flight.

3. CHANGE:

<u>OLD</u> 4–6–1. CLEARANCE TO HOLDING FIX

<u>NEW</u> 4–6–1. CLEARANCE TO HOLDING FIX

Title through b1

2. When <u>the pattern is charted</u>, you may omit all holding instructions except the charted holding direction and the statement "as published." Always issue complete holding instructions when the pilot requests them.

No Change

2. When <u>the assigned procedure or route</u> <u>being flown includes a charted pattern</u>, you may omit all holding instructions except the charted holding direction and the statement "as published." Always issue complete holding instructions when the pilot requests them.

1. PARAGRAPH NUMBER AND TITLE: 5-1-2. ALIGNMENT ACCURACY CHECK

2. BACKGROUND: A recent comment received from the field brought to light changes needed for the subject paragraph. This provision does not account for advances in operating platforms now fielded for both domains.

3. CHANGE:

<u>OLD</u>

5-1-2. ALIGNMENT ACCURACY CHECK

Add

During relief briefing, or as soon as possible after assuming responsibility for a control position, check the operating equipment for alignment accuracy and display acceptability. Recheck periodically throughout the watch.

REFERENCE-

FAAO JO 7210.3, Chapter 3, Chapter 8, Chapter 9, Chapter 10, and Chapter 11. Comparable Military Directives.

TERMINAL

<u>a.</u> Check the alignment of the radar video display by assuring that the video/digital map or overlay is properly aligned with a permanent target of known range and azimuth on the radar display. Where possible, check one permanent target per quadrant.

<u>b.</u> Accuracy of the radar video display must be verified for digitized radar systems by using the moving target indicator (MTI) reflectors, fixed location beacon transponders (Parrots), beacon real-time quality control (RTQC) symbols or calibration performance monitor equipment (CPME) beacon targets.

REFERENCE-

FAA<u>O</u> JO 7210.3, Para 3-<u>8</u>-1, Tolerance for Radar Fix Accuracy.

<u>c.</u> In Digital Terminal Automation Systems (DTAS) conducts continuous self-monitoring of alignment accuracy; therefore, controller alignment checks are not required.

EN ROUTE

<u>NEW</u>

5–1–2. ALIGNMENT ACCURACY CHECK *TERMINAL*

a. At locations not equipped with Digital <u>Terminal Automation Systems (DTAS), during</u> relief briefing, or as soon as possible after assuming responsibility for a control position, check the operating equipment for alignment accuracy and display acceptability. Recheck periodically throughout the watch.

REFERENCE-

FAA <u>Order</u> JO 7210.3, Chapter 3, Chapter 8, Chapter 9, Chapter 10, and Chapter 11.

Comparable Military Directives.

Delete

<u>1.</u> Check the alignment of the radar video display by assuring that the video/digital map or overlay is properly aligned with a permanent target of known range and azimuth on the radar display. Where possible, check one permanent target per quadrant.

2. Accuracy of the radar video display must be verified for digitized radar systems by using the moving target indicator (MTI) reflectors, fixed location beacon transponders (Parrots), beacon real-time quality control (RTQC) symbols or calibration performance monitor equipment (CPME) beacon targets.

REFERENCE-

FAA <u>Order</u> JO 7210.3, Para 3–<u>7</u>–1, Tolerance for Radar Fix Accuracy.

<u>3.</u> In Digital Terminal Automation Systems (DTAS) conducts continuous self-monitoring of alignment accuracy; therefore, controller alignment checks are not required.

Delete

c. <u>Radar Data Processing (RDP) alignment</u> checking is accomplished by the operational program as part of the certification procedures for system startup and then on a real-time basis during operational hours.	Delete
d. Ensure the situation display center and altitude limits for the system are appropriate for the operating position.	Delete
<u>REFERENCE</u> _ FAAO JO 7110.65, Para 5–14–5, Selected Altitude Limits.	Delete

1. PARAGRAPH NUMBER AND TITLE: 5–2–9. UNMANNED AIRCRAFT SYSTEMS (UAS) LOST LINK

2. BACKGROUND: Unmanned Aircraft Systems (UAS) are unique as they are operated through commands sent via line of sight, relayed by satellite relay, or by responding to pre–set programming in the on–board computer. There are two components to lost link: one is the uplink that transmits command and control (C2) instructions to the aircraft; the second is the downlink which relays the operation/status of onboard systems within the aircraft to the ground control station. If either link is disabled or malfunctions, the result is defined as "lost link", and some aircraft transponders will automatically reset to code 7400, execute a pre–programmed flight profile and controllers will react accordingly. NAS automation changes have been made to all NAS platforms to recognize the Mode 3 7400 Code. Upon this introduction to the NAS, not all UAS platforms are adapted for this code, some will still Squawk Mode 3 7600; therefore ATC personnel should continue to treat each situation as a Lost Link and continue existing procedures.

3. CHANGE:

<u>OLD</u>	NEW
Add	<u>5–2–9. UNMANNED AIRCRAFT SYSTEMS</u> (UAS) LOST LINK
Add	Code 7400 may be displayed by unmanned aircraft systems (UAS) when the control link between the aircraft and the pilot is lost. Lost link procedures are programmed into the flight management system and associated with the flight plan being flown.
Add	<u>When you observe a Code 7400 display, do the</u> <u>following:</u>
Add	<u>a. Determine the lost link procedure, as</u> outlined in the Special Airworthiness Certificate or Certificate of Waiver or Authorization <u>(COA).</u>
Add	b. Coordinate, as required, to allow UAS to execute the lost link procedure.
Add	<u>c.</u> <u>Advise Front Line Manager (FLM), when</u> feasible, so the event can be documented.

Add	d. If you observe or are informed by the PIC that the UAS is deviating from the programmed Lost Link procedure, or is encountering another anomaly, treat the situation in accordance with FAA Order J0 7110.65 Chapter 10, Section 1,Para 10–1–1(c).
Add	 <u>NOTE-</u> <u>1. The available lost link procedure should, at a minimum, include lost link route of flight, lost link orbit points, lost link altitudes, communications procedures and preplanned flight termination points if the event recovery of the UAS is deemed unfeasible.</u> <u>2. Each lost link procedure may differ and is dependent upon airframe and operation. These items are contained in the flight's Certificate of Authorization or Waiver (COA) and must be made available to ATC personnel in their simplest form at positions responsible for Unmanned Aircraft (UAS).</u> <u>3. Some UA airframes (Global Hawk) will not be programmed upon the NAS Automation roll out to squawk 7400. These airframes will continue to squawk 7600 should a lost link occur. The ATC Specialist must apply the same procedures described above.</u>
5–2–9 through 5–2–24	Re–number 5–2–10 through 5–2–25

1. PARAGRAPH NUMBER AND TITLE:

5–2–24. INOPERATIVE OR MALFUNCTIONING ADS–B TRANSMITTER 5–2–26. ADS–B ALERTS

2. BACKGROUND: CALL SIGN MISMATCH: If the Call Sign entered into the ADS–B avionics does not match the Call Sign in the flight plan, referred to as a Call Sign Mismatch (CSMM), an alert will be generated. Some aircraft are able to correct this in the cockpit. Phraseology has been added to advise the pilot of the CSMM. DUPLICATE ICAO ADDRESS: Each ADS–B equipped aircraft is expected to broadcast a unique ICAO address. Should two or more aircraft broadcast the same ICAO address within the same ADS–B Service Volume (regardless of altitude), the ADS–B network may be unable to resolve the targets. If radar reinforcement is available, then tracking will continue. If radar is unavailable, the controller may lose target resolution on one or both targets.

3. CHANGE:

<u>OLD</u> 5–2–<u>24</u>. INOPERATIVE OR MALFUNCTIONING ADS–B TRANSMITTER

TERMINAL-

Inform an aircraft when the ADS–B transmitter appears to be inoperative or malfunctioning.

<u>OLD</u>

Add

<u>NEW</u>

5–2–<u>25</u>. INOPERATIVE OR MALFUNCTIONING ADS–B TRANSMITTER

Inform an aircraft when the ADS–B transmitter appears to be inoperative or malfunctioning. <u>Notify</u> <u>the FLM/CIC of the aircraft call sign and</u> <u>location of aircraft.</u>

<u>NEW</u> 5–2–26. ADS–B ALERTS

Add	a. <u>Call Sign Mis–Match (CSMM). A CSMM</u> alert will occur when the ADS–B broadcast call sign does not match the flight plan call sign.
Add	<u>PHRASEOLOGY–</u> (Aircraft ID) YOUR ADS–B CALL SIGN DOES NOT MATCH YOUR FLIGHT PLAN CALL SIGN.
Add	b. Duplicate ICAO Address. If the broadcast ICAO address is shared with one or more flights in the same ADS-B Service Area (regardless of altitude), and radar reinforcement is not available, target resolution may be lost on one or both targets. Notify the FLM/CIC of the aircraft call sign and location of aircraft.
Add	<u>NOTE-</u> 1. If this occurs controllers should ensure targets re- main radar reinforced or at least 6 NMs apart. 2. Duplicate ICAO Address Alerts appear as "DA" and are associated with the Data Block (DB) on STARS and CARTS systems. Duplicate ICAO Address Alerts ap- pear as "DUP" and are associated with the DB on MEARTS systems. Duplicate ICAO Address Alerts ap- pear as "Duplicate 24-bit Address" on ERAM systems.

1. PARAGRAPH NUMBER AND TITLE: 5-5-9. SEPARATION FROM OBSTRUCTIONS

2. BACKGROUND: AJV–8 recently released an interpretation concerning Separation from Obstructions and the sub–paragraph that permits discontinuing vertical separation after passing an obstruction displayed on the radar scope. In the interpretation, AJV–8 clarified that the application of the paragraph applies to a prominent obstruction and that it be contained within a buffer area. It is a misapplication to discontinue vertical separation after passing an obstruction, and not contained within a buffer area. The term prominent obstruction was removed due to the lack of a definition of prominent obstruction at the time. A new "prominent obstruction was added to the Pilot/Controller Glossary in 2011. When this change is incorporated into the order, the June 2016 interpretation from AJV–8 will be rescinded.

3. CHANGE:

<u>OLD</u>

5–5–9. SEPARATION FROM OBSTRUCTIONS

a. TERMINAL. Separate aircraft from obstructions depicted on the radar display by the following minima:

a1 and **a2**

b. TERMINAL. Vertical separation of aircraft above an obstruction depicted on the radar display may be discontinued after the aircraft has passed <u>it</u>.

<u>NEW</u>

5–5–9. SEPARATION FROM OBSTRUCTIONS

a. TERMINAL. Separate aircraft from **prominent** obstructions depicted on the radar display by the following minima:

No Change

b. TERMINAL. Vertical separation of aircraft above a **prominent** obstruction depicted on the radar display **and contained within a buffer area** may be discontinued after the aircraft has passed **the obstruction.**

1. PARAGRAPH NUMBER AND TITLE: 5-8-2. INITIAL HEADING

2. BACKGROUND: "Climb Via" was developed in collaboration with the FAA, NATCA, and the Pilot and Controller Procedures and System Integration (PCPSI) working group under the Performance Based Operations Aviation Rulemaking Committee (PARC). Since the implementation of Climb Via in 2014, aircraft that have filed or have been cleared on an RNAV SID with a published lateral path from the runway end are taken off the SID by being assigned an initial heading to fly. In these instances, pilots require an altitude to maintain since they are no longer flying the lateral path that the SID was protecting.

3. CHANGE:

OLD

NEW 5-8-2. INITIAL HEADING 5-8-2. INITIAL HEADING Title through a PHRASEOLOGY No Change NOTE-NOTE-TERMINAL. A purpose for the heading is not necessary, **<u>1.</u>** TERMINAL. A purpose for the heading is not necessince pilots operating in a radar environment associate sarv. assigned headings with vectors to their planned route of since pilots operating in a radar environment associate flight. assigned headings with vectors to their planned route of flight. <u>2. ATC assumes responsibility for terrain and obstacle</u> avoidance when IFR aircraft are below the minimum IFR altitude (MVA, MIA, MEA) and are taken off departure/ missed approach procedures, or are issued goaround instructions, except when utilizing a Diverse Vector Area (DVA) with an aircraft departing from the surface. REFERENCE-REFERENCE-FAAO JO 7110.65, Para 4-3-2, Departure Clearances. FAA Order JO 7110.65, Para 4-3-2, Departure Clearances. FAAO JO 7110.65, Para 5-6-3, Vectors Below Minimum Altitude. FAA Order JO 7110.65, Para 5-6-3, Vectors Below Minimum Altitude. b. Issue an altitude to maintain with the initial Add heading when the heading will take the aircraft off a departure procedure that contains both a published lateral path to a waypoint and crossing restrictions. b Re–letter c

1. PARAGRAPH NUMBER AND TITLE: 5–14–3. COMPUTER ENTRY OF FLIGHT PLAN INFOR-MATION

2. BACKGROUND: FAA Order 7110.311C, Procedural Guidance for FAA Order 7110.65, En Route Automation Modernization, effective October 15, 2014, included revised guidance for the use of the Local Interim Altitude (LIA) but restricted its use to the transferring controller. It also introduced a Note that provided different definitions for a transferring or receiving controller regarding current status of the aircraft. As a result, numerous Air Traffic Safety Action Program (ATSAP) reports were filed describing occurrences where someone other than the controller in direct communication with the aircraft altered the data block on the transferring controller's display. Because En Route Automation Modernization (ERAM) passes data back to the previous ARTCC after an automated handoff is accomplished, attempting to adhere to the language in the Note (after coordination of an altitude) can result in the data block being unexpectedly altered on the transferring controller's display. This type of practice causes confusion and can result in a coordinated altitude never being issued. In February 2016, the language of the Note was examined by a Safety Risk Management (SRM) panel. This issue was identified as a hazard and the panel recommended to remove the Note.

<u>OLD</u> 5–14–3. COMPUTER ENTRY OF FLIGHT PLAN INFORMATION

Title through a1

<u>NOTE-</u>

As it applies to altitude, the current status of the aircraft, for the transferring controller, indicates the clearance given by air traffic control, directly to and read back by an aircraft. This ensures the aircraft has received the clearance and is expected to comply with the instructions. The current status of the aircraft, for the receiving controller, indicates the specific verbally coordinated altitude, if that differs from the altitude coordinated by automated means.

2. <u>Assigned and Interim altitude information</u> <u>must not be modified outside of the controller's area</u> <u>of jurisdiction unless verbally coordinated or</u> <u>specified in a Letter of Agreement or Facility</u> <u>Directive.</u>

Add

a3 through a3(b)

(c) <u>A Local Interim Altitude (LIA), entered by</u> <u>the transferring controller</u> when the assigned altitude differs from the coordinated altitude unless verbally coordinated or specified in a Letter of <u>Agreement or Facility Directive</u>.

<u>NEW</u> 5–14–3. COMPUTER ENTRY OF FLIGHT PLAN INFORMATION

No Change Delete

2. <u>Unless otherwise specified in a facility</u> <u>directive or letter of agreement, do not modify</u> <u>assigned or interim altitude information prior to</u> <u>establishing communication with an aircraft</u> <u>that is outside your area of jurisdiction unless</u> <u>verbal coordination identifying who will modify</u> <u>the data block has been accomplished.</u>

<u>NOTE-</u>

<u>1. A local interim altitude (LIA) can be used as a means of recording interfacility coordination.</u>

2. Conflict probe in EDST does not probe for the LIA.

No Change

(c) Where appropriate for interfacility handoffs, an LIA when the assigned altitude differs from the coordinated altitude unless verbally coordinated or specified in a letter of agreement or facility directive.

1. PARAGRAPH NUMBER AND TITLE: 6–7–5. INTERVAL MINIMA

2. BACKGROUND: FAA Order7110.65W contained changes to wake turbulence separation minima. When developing these changes, the basic minima of 2 minutes or 5 miles was inadvertently removed from the paragraph, and contained only wake turbulence separations.

3. CHANGE:

<u>OLD</u>

6-7-5. INTERVAL MINIMA

<u>Use the following time or radar interval as the minimum interval between successive approaches:</u>

REFERENCE-

FAAO JO 7110.65, Para 5–9–5, Approach Separation Responsibility. FAAO JO 7110.65, Para 6–7–1, Application. FAAO JO 7110.65, Para 6–7–2, Approach Sequence.

<u>NEW</u>

6-7-5. INTERVAL MINIMA

a. Except as provided in Subparagraph b, use a 2-minute or a 5-mile radar interval as the minimum between successive approaches.

REFERENCE-

FAA <u>Order</u> JO 7110.65, Para 5–9–5, Approach Separation Responsibility. FAA <u>Order</u> JO 7110.65, Para 6–7–1, Application. FAA <u>Order</u> JO 7110.65, Para 6–7–2, Approach Sequence.

Add	WAKE TURBULENCE APPLICATION
Add	b. Use the following time or radar interval as the minimum interval.
	the minimum interval:
<u>a.</u> Behind super:	<u>1.</u> Behind super:
<u>1.</u> Heavy – 3 minutes or 6 miles.	(a) Heavy – 3 minutes or 6 miles.
<u>2.</u> Large – 3 minutes or 7 miles.	(b) Large – 3 minutes or 7 miles.
3. Small – 4 minutes or 8 miles.	(c) Small – 4 minutes or 8 miles.
<u>b.</u> <u>B</u> ehind heavy:	 <u>Small</u> behind heavy – <u>3 minutes or 6 miles.</u>
<u>1. Heavy – 2 minutes or 4 miles.</u>	Delete
2. Large – 2 minutes or 5 miles.	Delete
3. Small – 3 minutes or 6 miles.	Delete
c. Small behind B757 – 2 minutes or 4 miles.	Delete
<u>d</u>. Increase the interval, as necessary, taking into account the:	<u>c</u> . Increase the interval, as necessary, taking into account the:
1 through 4	No Change

1. PARAGRAPH NUMBER AND TITLE: 7-2-1. VISUAL SEPARATION

2. BACKGROUND: FAA Order7110.65W contained a restriction that did not allow visual separation to be applied behind Super aircraft. Due to overlapping efforts to effect changes to paragraph 7-2-1 at the time, the restriction concerning visual separation behind super aircraft was omitted.

3. CHANGE:

<u>OLD</u>

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.

NEW

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. **Visual separation is not authorized when the lead aircraft is a super.**

1. PARAGRAPH NUMBER AND TITLE: 7-4-1. VISUAL APPROACH

2. BACKGROUND: Through a review of safety data, the 7110.65 Handbook Steering Committee has identified a need to clarify the status and separation requirements for an aircraft on a Visual Approach that is unable to complete a landing. There have been several incidents following a go-around where the controller has incorrectly cancelled the IFR flight plan without a request from the pilot and applied VFR procedures. It must be understood that a Visual Approach does not end at the runway threshold. A Visual Approach continues until one of the following has occurred: the aircraft lands; the pilot cancels their IFR flight plan; or ATC issues alternate

instructions. A Visual Approach is not a standard instrument approach and therefore has no published missed approach segment. ATC is responsible for maintaining standard IFR separation including the use of visual separation provided by the pilot or the tower. At airfields with an operating control tower, ATC may instruct the pilot to enter the traffic pattern. Appropriate IFR separation must be provided until the aircraft lands or the pilot cancels their IFR flight plan. At airfields without an operating control tower, aircraft are expected to complete a landing as soon as possible or contact ATC for further clearance.

3. CHANGE:

<u>OLD</u>

7–4–1. VISUAL APPROACH

A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually to the airport of intended landing: it is not an instrument approach procedure. Also, there is no missed approach segment. An aircraft unable to complete a visual approach must be handled as any go-around and appropriate separation must be provided.

Add

Add

REFERENCE-

FAA<u>O</u> JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories.

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

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

FAAO JO 7110.65, Para 7-4-4, Approaches to Multiple Runways

<u>NEW</u>

7-4-1. VISUAL APPROACH

A visual approach is an ATC authorization for an aircraft on an IFR flight plan to proceed visually **and clear of clouds** to the airport of intended landing. <u>A visual approach is</u> not a <u>standard</u> instrument approach procedure <u>and has</u> no missed approach segment. An aircraft unable to complete **a landing from** a visual approach must be handled as any go-around and appropriate <u>IFR</u> separation must be provided <u>until the aircraft lands or the pilot cancels their IFR flight plan.</u>

a. At airports with an operating control tower, aircraft executing a go-around may be instructed to enter the traffic pattern for landing and an altitude assignment is not required. The pilot is expected to climb to pattern altitude and is required to maintain terrain and obstruction clearance. ATC must maintain applicable separation from other aircraft.

b. At airports without an operating control tower, aircraft executing a go-around are expected to complete a landing as soon as possible or contact ATC for further clearance. ATC must maintain separation from other IFR aircraft.

REFERENCE– FAA Order JO 7110.65, Para 2–1–4, Operational Priority. FAA Order JO 7110.65, Para 2–1–20, Wake Turbulence Cautionary Advisories. FAA Order JO 7110.65, Para 3–10–2, Forwarding Approach Information by Nonapproach Control Facilities. FAA Order JO 7110.65, Para 7–2–1, Visual Separation. FAA Order JO 7110.65, Para 7–4–4, Approaches to Multiple Runways. FAA Order JO 7210.3, Para 10–3–14, Go–around/Missed Approach. P/CG Term – Go–around. AIM, Para 5–4–23, Visual Approach.

1. PARAGRAPH NUMBER AND TITLE:

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

2. BACKGROUND: The Advanced Technologies and Oceanic Procedures (ATOP) platform allows the controller to issue an ADS–B ITP clearance if either the aircraft performing the ITP or the reference aircraft have a turn in their flight plan provided that required separation is maintained.

3. CHANGE:

<u>OLD</u>

8–7–3. LONGITUDINAL SEPARATION

Title through d4(a)

(b) same tracks with no turns permitted that <u>degrade</u> required separation during the ITP.

<u>OLD</u>

8-8-3. LONGITUDINAL SEPARATION

Title through e4(a)

(b) same tracks with no turns permitted that <u>degrade</u> required separation during the ITP.

<u>OLD</u>

8-9-3. LONGITUDINAL SEPARATION

Title through b4(a)

(b) same tracks with no turns permitted that <u>degrade</u> required separation during the ITP.

<u>OLD</u>

8-10-3. LONGITUDINAL SEPARATION

Title through **b4**(a)

(b) same tracks with no turns permitted that <u>degrade</u> required separation during the ITP.

NEW

8–7–3. LONGITUDINAL SEPARATION

No Change

(b) same tracks with no turns permitted that <u>reduce</u> required separation during the ITP.

<u>NEW</u>

8-8-3. LONGITUDINAL SEPARATION

No Change

(b) same tracks with no turns permitted that **reduce** required separation during the ITP.

<u>NEW</u>

8–9–3. LONGITUDINAL SEPARATION

No Change

(b) same tracks with no turns permitted that **reduce** required separation during the ITP.

<u>NEW</u>

8-10-3. LONGITUDINAL SEPARATION

No Change

(b) same tracks with no turns permitted that **reduce** required separation during the ITP.

1. PARAGRAPH NUMBER AND TITLE: Appendix B. Standard Operating Practice (SOP) for Aircraft Deviating for Weather Near Active Special Activity Airspace (SAA)

2. BACKGROUND: As a result of an Air Traffic Safety Action Program (ATSAP) Corrective Action Request (CAR), Standard Operating Procedure(s) (SOP), were created from existing guidance contained throughout FAA Order 7110.65, Air Traffic Control, for handling weather related deviations into active Special Activity Airspace (SAA).

3. CHANGE:

OLD Add <u>NEW</u> <u>Appendix B. Standard Operating Practice</u> (SOP) for Aircraft Deviating for Weather Near

Active Special Activity Airspace (SAA)

Add	<u>The procedures listed below must be applied</u> <u>and contained in a facility SOP when</u> <u>aircraft deviate into and/or near an active or</u> <u>scheduled SAA:</u>
Add	<u>1. PURPOSE</u>
Add	This appendix prescribes the method and step-by-step process for handling aircraft deviations for weather near active Special Activity Airspace (SAA). The procedures are intended to work in parallel to the preventive procedures outlined in FAA Order JO 7210.3, Facility Operation and Administration, Para 17-2-4a.9, which must be applied when weather is scheduled to impact an active or scheduled SAA.
Add	2. DISCUSSION
Add	a. In all operational facilities, the increase in traffic density and the need for the expeditious movement of traffic without compromising safety have emphasized the importance of handling aircraft deviations for weather in the vicinity of active SAA.
Add	b. The methods, and practices used for handling aircraft requesting or initiating deviations off of their filed route due to weather require time critical responses to the request or in response to observed course deviations. Major issues can occur whenever there is a heavy reliance upon reactive control actions when not performed according to this handbook and the procedures outlined in FAA Order JO 7210.3.
Add	c. Course deviations in areas near active SAA's increase the workload for specialists at the time of their request or observation. The intent of this SOP is to make the handling of the requested deviation or to correct the observed course deviation take place smoothly and to ensure a safe operation with a minimum amount of workload.
Add	<u>3. TERMS</u>
Add	<u>The following terms are important for a</u> complete understanding of this SOP:
Add	<u>a. Status Information Area (SIA). Manual or</u> <u>automatic displays of the current status of</u> <u>position related equipment and operational</u> conditions or procedures.

Add	<u>b. Special Activity Airspace (SAA). Airspace of</u> <u>defined dimensions as an Alert Area, Controlled</u> <u>Firing Area, Military Operations Area (MOA),</u> <u>Prohibited Area, Restricted Area or Warning</u> <u>Area.</u>
Add	<u>c. Deviations. A departure from a current</u> <u>clearance, such as an off course maneuvers to</u> <u>avoid weather or turbulence.</u>
Add	d. Using Agency. The using agency is the military unit or other organization whose activity established the requirement for the SAA. The using agency is responsible for ensuring that:
Add	<u>1. The airspace is used only for its designated</u> <u>purpose.</u>
Add	2. <u>Proper scheduling procedures are</u> established and utilized.
Add	3. The controlling agency is kept informed of changes in scheduled activity, to include the completion of activities for the day.
Add	4. <u>A point of contact is made available to</u> enable the controlling agency to verify schedules, and coordinate access for emergencies, weather diversions, etc.
Add	5. An ATC facility may be designated as the using agency for joint-use areas when that facility has been granted priority for use of the airspace in a joint-use letter of procedure or letter of agreement.
Add	4. PRECAUTIONS
Add	a. Unless clearance of nonparticipating aircraft in/through/adjacent to an active SAA is provided for in a Letter of Agreement or Letter of Procedure, any clearance issued to a nonparticipating aircraft must ensure separation from that SAA by the appropriate minima specified in paragraph 9–3–2.
Add	b. The specialist receiving a request for a route deviation in the vicinity of an active SAA cannot issue a clearance into the active SAA airspace, unless the provisions of Paragraph 9–3–4 of this handbook are applied. The FAA has no jurisdictional authority over the use of non-joint use prohibited/restricted/warning area airspace; therefore, clearance cannot be issued for flight therein without appropriate approval.

Add	c. If the specialist is able to coordinate approval for entry into the SAA from the using agency, a clearance to the aircraft complying with the provisions coordinated with the using agency can be issued; the specialist must notify the FLM/CIC of this situation and of subsequent requests or deviations from other aircraft in the same area.
Add	d. Use of Code 7700 for aircraft deviations into active SAA is not encouraged, particularly in situations involving multiple aircraft. Positive identification of aircraft may be lost if an aircraft deviates from flight plan track, particularly in the event of a momentary loss of radar or other interruption in tracking.
Add	<u>5. RESPONSIBILITY:</u>
Add	If a deviation occurs that causes an aircraft to enter SAA the air traffic team must follow the procedures outlined below:
Add	a. Attempt the following:
Add	<u>1. Handoff the aircraft to the Using Agency</u> and transfer communications; or
Add	<u>2. Point Out the aircraft to the Using Agency.</u> <u>The controller must:</u>
Add	(a) <u>Continue to provide safety alerts and</u> <u>traffic advisories, as appropriate, to the affected</u> <u>aircraft.</u>
Add	(b) <u>Continue to coordinate with the Using</u> <u>Agency until the situation is resolved.</u>
Add	(c) Assist the aircraft in exiting the SAA.
Add	<u>3. If the handoff or point out is unsuccessful,</u> <u>the controller must:</u>
Add	<u>(a)</u> If able, advise the Using Agency of the pilot's actions.
Add	<u>(b)</u> <u>Provide safety alerts and traffic</u> <u>advisories, as appropriate.</u>
Add	(c) Assist the aircraft in exiting the SAA as quickly as the weather allows.
Add	(d) <u>Continue to coordinate with the Using</u> <u>Agency until the situation is resolved.</u>
Add	<u>4. If no approval to enter the SAA is given by</u> <u>the using agency:</u>
Add	(a) The specialist must advise the aircraft requesting the course deviation, or deviating toward the SAA, the status of the SAA, and that no clearance can be issued permitting entry into the airspace or;

Add	(<u>b)</u> <u>If an alternative course, which remains</u> <u>clear of the active SAA, is available, offer it to the</u> <u>pilot of the aircraft in question.</u>
Add	5. If the pilot of the nonparticipating aircraft exercises their discretion to deviate from that clearance which ensures separation from an active SAA, and the track of the aircraft will not maintain the required minima from an active SAA, controllers must ascertain if the pilot is exercising emergency authority:
Add	(<u>a)</u> <u>If so, provide assistance and obtain</u> <u>information as provided in Chapter 10,</u> <u>Emergencies.</u>
Add	(<u>b)</u> <u>If not, provide appropriate pilot</u> <u>deviation notification as specified in Paragraph</u> <u>2–1–26, Pilot Deviation Notification.</u>